



Repair Manual Golf Variant 2010 ►

Brake System

Edition 01.2013





List of Workshop Manual Repair Groups

Repair Group

- 00 - General, Technical Data
- 45 - Antilock Brake System
- 46 - Mechanical Components
- 47 - Hydraulic Components



Technical information should always be available to the foremen and mechanics, because their careful and constant adherence to the instructions is essential to ensure vehicle road-worthiness and safety. In addition, the normal basic safety precautions for working on motor vehicles must, as a matter of course, be observed.

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00 – General, Technical Data

1 General Information

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[⇒ P1.1 R Numbers", page 1](#)

[⇒ I1.2 Information", page 3](#)

1.1 Brake PR Numbers

[⇒ N1.1.1 Number", page 1](#)

[⇒ B1.1.2 Rakes", page 1](#)

[⇒ B1.1.3 Rakes, Through 12/06/2009", page 2](#)

[⇒ B1.1.4 Rakes, From 12/06/2009", page 2](#)

1.1.1 PR Number

The PR number on the vehicle data label describes which brake system is installed in the vehicle.

Example of a Vehicle Data Label:



Front wheel brakes 1ZM are installed in this vehicles -arrow-.



Note

The PR number for the rear brakes is not on the vehicle data label. For information regarding each rear brake installed. Refer to ELSA.

There is a vehicle data label in the spare wheel well and also one in the customer Maintenance booklet.

- ◆ Allocation. Refer to the Parts Catalog.
- ◆ The following tables show the PR number code key. This is important in order to know the brake caliper/brake disc and brake pad combination.

1.1.2 Front Brakes

Engine Version	PR Number	Front Brakes
2.5L 125 kW	1ZP	FN 3 (15")
2.0L 103 kW TDI	1ZD / 1LV	FN 3 (16")
2.0L 147 kW TFSI		



1.1.3 Rear Brakes, Through 12/06/2009

Engine Version	PR Number	Rear Brakes
2.5L 125 kW	1KE	CII 41 (15") TRW
2.0L 103 kW TDI	1KJ	CII 41 (16") TRW
2.0L 147 kW TFSI		

1.1.4 Rear Brakes, From 12/06/2009

Engine Version	PR Number	Rear Brakes
2.5L 125 kW	1KT	Bosch
2.0L 103 kW TDI		
2.0L 147 kW TFSI		

1.1.5 Front Brakes

Engine Version	PR Number	Front Brakes
1.2L 63 kW	1ZM	FS III (15")
1.2L 77 kW		
1.4L 59 kW		
1.6L 75 kW		
1.6L 66 kW TDI		
1.6L 77 kW TDI FWD		
2.0L 81 kW TDI		
1.4L 90 kW	1ZE	FN 3 (15")
1.4L 118 kW	1LJ	FN 3 (16")
2.0L 100 kW TDI		
2.0L 103 kW TDI		
1.6L 77 kW TDI 4MOTION		
1.4L 125 kW		
2.0L 147 kW TFSI		

1.1.6 Front Brakes, Japan

Engine version	PR number	Front Brakes
1.4L 90 kW	1ZP	FN 3 (15")
2.0L 147 kW TFSI	1ZD	FN 3 (16")

1.1.7 Rear Brakes, Through 12/06/2009

Engine version	PR number	Rear Brakes
1.4L 59 kW	1KF	CII 41 (15") TRW
1.6L 75 kW		
1.6L 77 kW TDI FWD		
1.4L 90 kW		
1.4L 118 kW		
2.0L 100 kW TDI		
2.0L 103 kW TDI		
1.6L 77 kW TDI 4MOTION		
1.4L 125 kW		
	1KJ	CII 41 (16") TRW



Engine version	PR number	Rear Brakes
2.0L 147 kW TFSI		

1.1.8 Rear Brakes, From 12/06/2009

Engine version	PR number	Rear Brakes
1.2L 66 kW	1KS	Bosch
1.2L 77 kW		
1.4L 59 kW		
1.6L 75 kW		
1.6L 77 kW TDI FWD		
1.4L 90 kW		
1.4L 118 kW		
1.4L 125 kW		
1.6L 77 kW TDI 4MOTION		
2.0L 81 kW TDI		
2.0L 100 kW TDI		
2.0L 103 kW TDI		
2.0L 147 kW TFSI		

1.1.9 Rear Brakes, Japan, Through 12/06/2009

Engine version	PR number	Rear Brakes
1.4L 90 kW	1KE	CII 41 (15") TRW
2.0L 147 kW TFSI		

1.1.10 Rear Brakes, Japan, From 12/06/2009

Engine version	PR number	Rear Brakes
1.4L 90 kW	1KT	Bosch
2.0L 147 kW TFSI		

1.2 General Information

- ◆ The testing takes place on a test stand.
- ◆ During testing, manual transmission vehicles must be in idle and automatic transmission vehicles must be in "N".
- ◆ Always observe the test stand manufacturer instructions.



Note

Brake regulation system does not function with ignition "off".



2 Description and Operation

⇒ [T2.1 echnical Data", page 4](#)

2.1 Brakes Technical Data

⇒ [M2.1.1 aster Cylinder and Brake Booster", page 4](#)

⇒ [I2.1.2 II Front Brakes", page 4](#)

⇒ [B2.1.3 rakes FN 3 \(15"\)", page 5](#)

⇒ [B2.1.4 rakes FN 3 \(16"\)", page 6](#)

⇒ [B2.1.5 rakes CII 41 \(15"\) TRW", page 6](#)

⇒ [B2.1.6 rakes CII 41 \(16"\) TRW", page 7](#)

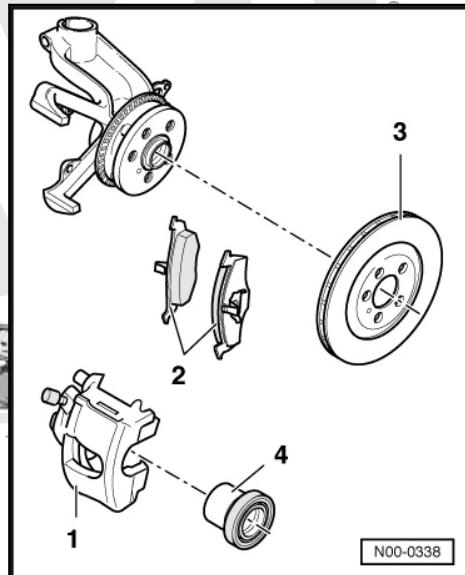
⇒ [B2.1.7 rakes, Bosch", page 8](#)

2.1.1 Brake Master Cylinder and Brake Booster

Brake master cylinder 1)	diameter in mm	22.2	23.8
Brake booster (LHD) 1)	Diameter in inches	10	10
Brake booster (RHD) 1)	Diameter in inches	7/8	7/8

¹⁾ For allocation. Refer to the Parts Catalog.

2.1.2 FS III Front Brakes

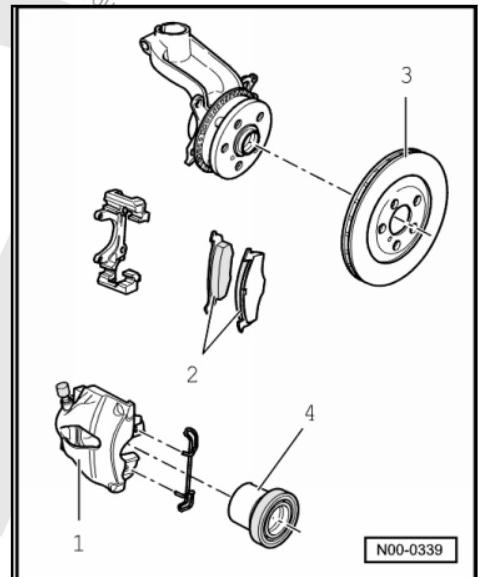


Item	PR Number	1ZM	
1	Brake caliper	FS III (15")	
2	Brake pad, thickness without backing plate	mm	14
3	Brake Rotor	diameter in mm	280



Item	PR Number		1ZM
	Brake rotor, thickness	mm	22
4	Brake caliper, piston	diam- eter in mm	54

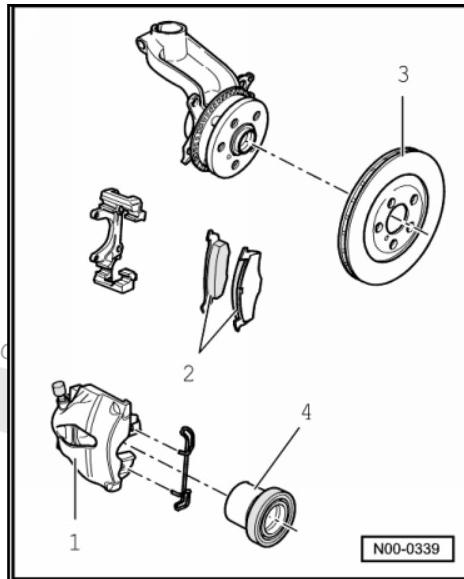
2.1.3 Front Brakes FN 3 (15")



Item	PR Number		1ZE / 1ZP
1	Brake caliper		FN3 (15")
2	Brake pad, thickness with- out backing plate	mm	14
3	Brake Rotor	diam- eter in mm	288
	Brake rotor, thickness	mm	25
4	Brake caliper, piston	diam- eter in mm	54

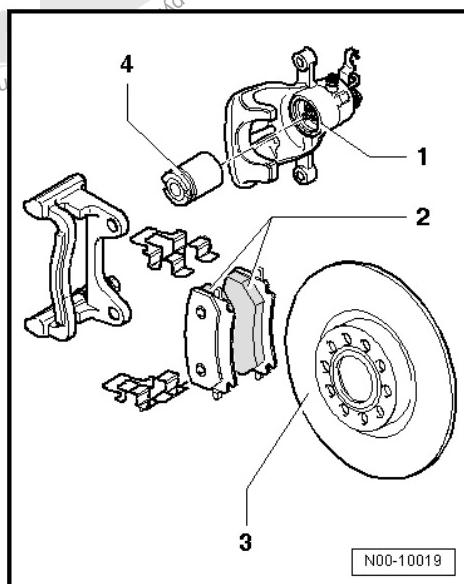


2.1.4 Front Brakes FN 3 (16")



Item	PR Number	1ZD / 1LJ / 1LV	
1	Brake caliper	FN3 (16")	
2	Brake pad, thickness with- out backing plate	mm	14
3	Brake Rotor	diam- eter in mm	312
	Brake rotor, thickness	mm	25
4	Brake caliper, piston	diam- eter in mm	54

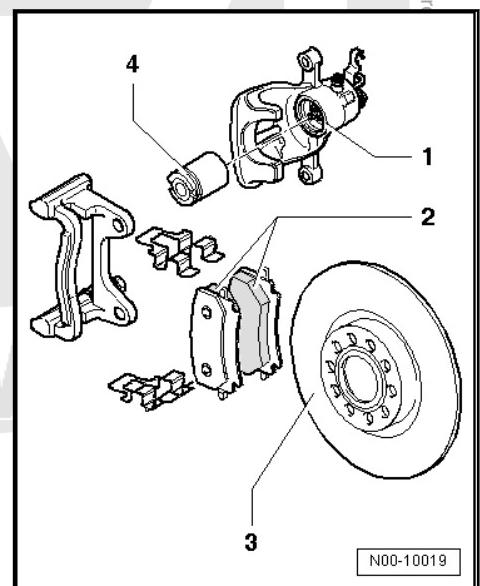
2.1.5 Rear Brakes CII 41 (15") TRW





Item	PR Number	1KE / 1KF	
1	Brake caliper	CII 41 (15") TRW	
2	Brake pad, thickness without backing plate	mm	11
	Brake Rotor	diam- eter in mm	256
3	Brake rotor, thickness	mm	12
	Brake caliper, piston	diam- eter in mm	41

2.1.6 Rear Brakes CII 41 (16") TRW

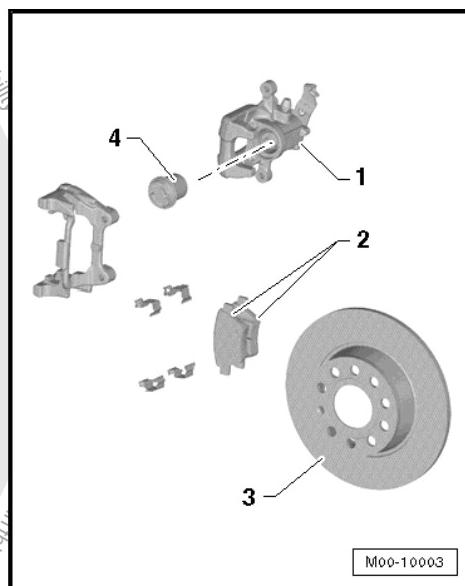


N00-10019

Item	PR Number	1KJ	
1	Brake caliper	CII 41 (16") TRW	
2	Brake pad, thickness without backing plate	mm	11
	Brake Rotor	diam- eter in mm	282
3	Brake rotor, thickness	mm	12
	Brake caliper, piston	diam- eter in mm	41



2.1.7 Rear Brakes, Bosch



Item	PR Number	1KT / 1KS		
1	Brake caliper		Bosch	
2	Brake pad, thickness without backing plate	mm	12	
3	Brake Rotor	diam- eter in mm	272	
	Brake rotor, thickness	mm	10	
4	Brake caliper, piston	diam- eter in mm	38	



3 Diagnosis and Testing

⇒ V3.1 "Vehicles, Checking", page 9

⇒ V3.2 "Vehicles, Checking", page 9

3.1 FWD Vehicles, Checking

The brake inspection is to be performed on a one-axle roller test stand.

Do not exceed a test speed of 6 km/h.

Use the values that are approved by Volkswagen.

These values fulfill the conditions.

3.2 AWD Vehicles, Checking

For AWD vehicles, the Brake Inspection is to be Performed On an opposite-Running One-Axle Roller Test Stand.

Opposite-running means: The rollers on the one-axle roller test stand are rotated forward on one side and backward on the other side.

This prevents the brake forces from being transmitted into the powertrain.

During testing, the wheel turning forward is measured, therefore 2 braking tests are necessary on each axle.

Do not exceed a test speed of 6 km/h.

Use the values that are approved by Volkswagen.

These values fulfill the conditions.

If There is no Test Stand Available for AWD Vehicles, the Brake Inspection can also be Performed on a Standard One-Axle Roller Test Stand as Follows:

- Drive the vehicle forward onto the rollers.
- Turn off the engine and wait 2 seconds.
- Perform the braking test.
- Start the engine and wait approximately 5 seconds until there is enough vacuum.
- Drive the vehicle forward until the rear wheel are standing on the rollers.
- Turn off the engine and wait 2 seconds.
- Perform the braking test for the rear brakes.
- Start the engine and wait approximately 5 seconds until there is enough vacuum.



45 – Antilock Brake System

1 General Information

⇒ [I1.1 nformation about ABS", page 10](#)

⇒ [R1.2 epair Instructions", page 11](#)

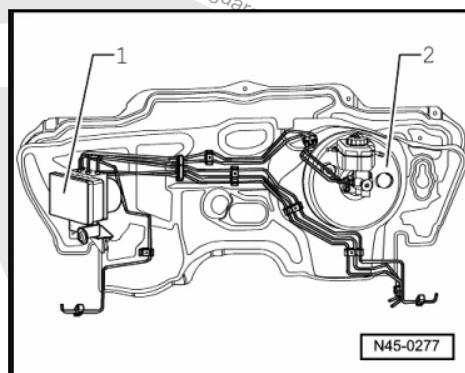
⇒ [D1.3 iagnostic Tester", page 11](#)

1.1 General Information about ABS

The ABS brake system is divided diagonally (two circuits). The brake booster is pneumatically controlled by the vacuum brake booster.

Vehicles with ABS do not have a mechanical brake pressure regulator. A special software in the control module controls the brake force distribution for the rear axle.

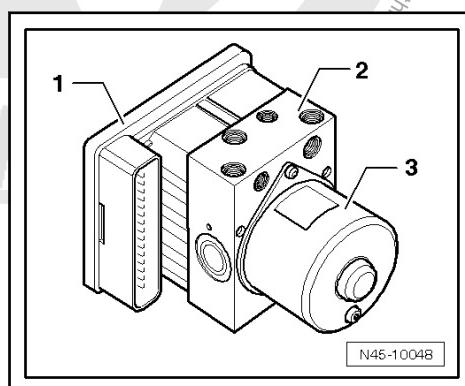
ABS Disturbances Do Not Affect the Brake System and the Booster. The Brake System Remains Functional Without the ABS. The Braking Behavior Will Be Different Though. After the ABS Indicator Lamp -K47- Comes On, the Rear Wheels Could Lock Too Early While Braking.



1 - Hydraulic unit and control module

2 - Brake Booster

The control module -1- and hydraulic unit -2- are a single unit. Separation is only possible when removed from the vehicle. The hydraulic pump -3- must not be separated from the hydraulic unit.



Separation cannot be performed on vehicles with hydraulic brake booster or hill assist.



1.2 ABS Repair Instructions

- ◆ Before carrying out repair work on the anti-lock braking system, as well as the control module coding, determine the cause of the malfunction using "guided fault finding".

"Guided fault finding" is performed using the Vehicle Diagnostic Tester.

- ◆ Turn off the ignition and disconnect the battery ground cable.
- ◆ Before welding with an electric welding tool, pay attention to the notes found here ⇒ General Information; Body Repairs, Body Collision Repair.
- ◆ When working with brake fluid, observe relevant safety precautions and notes. Refer to [⇒ S1.3 ystem, Bleeding", page 132](#).
- ◆ After finishing any work that required opening the brake system, bleed the brake system using the Brake Charger/Bleeder Unit -VAS5234- or Brake Charge and Bleed Equipment -VAG1869-. Refer to [⇒ S1.3 ystem, Bleeding", page 132](#).
- ◆ During final road test, carry out at least one ABS-controlled braking operation (appropriate pulsations must be felt at brake pedal).
- ◆ It is necessary to maintain a high level of cleanliness when working on the ABS system.
- ◆ It is not permitted to use any products which contain mineral oil, such as oils, greases etc.
- ◆ Thoroughly clean all unions and the adjacent areas before loosening. Do not use aggressive cleaning agents such as brake cleaner, fuel thinners or similar chemicals.
- ◆ Place parts that have been removed on a clean surface and cover.
- ◆ After disconnecting the control module/hydraulic unit, use transport protection for the valve body.
- ◆ Carefully cover or seal opened components, if repairs are not performed immediately (use Sealing Plugs -1H0 698 311 A-).
- ◆ Only use lint-free cloths.
- ◆ Only unpack replacement parts immediately prior to installation.
- ◆ Only use parts in their original packaging.
- ◆ When the system is open do not work with compressed air or do not move the vehicle.
- ◆ The ABS Control Module -J104- may be briefly exposed to a maximum temperature of 95 °C (203 °F) when painting.
- ◆ The ABS Control Module -J104- may be exposed to a maximum temperature of 85 °C (185 °F) for approximately 2 hours.
- ◆ Make sure that brake fluid does not enter harness connectors.

1.3 Vehicle Diagnostic Tester

Special tools and workshop equipment required

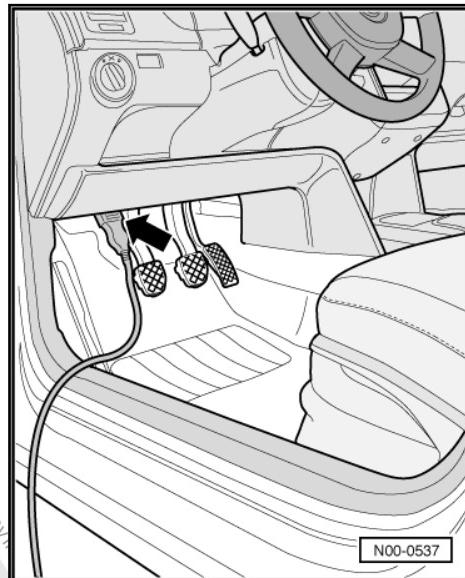
- ◆ Vehicle Diagnostic Tester



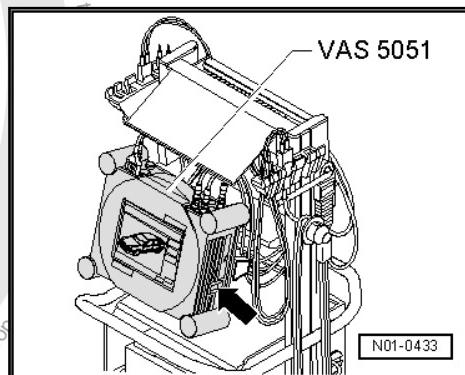
WARNING

- ◆ During a test drive, the testing and measuring equipment must always be secured on the back seat.
- ◆ These devices may be operated only by a passenger during a test drive.

Connect the Vehicle Diagnostic Tester -1- as follows:



- Connect the connector from the Diagnostic Cable -arrow- to the diagnostic connection.
- Switch on the Vehicle Diagnostic Tester -arrow-.



The system is ready when the button fields for the different operating modes appear.

- Turn on the ignition.
- Touch **Guided Fault Finding** on the touch screen.
- Enter the data in Vehicle Diagnostic Tester.
 - ◆ **Chassis**
 - ◆ **Brake System**
 - ◆ **Anti-Lock Braking System**
 - ◆ **Functions**



2 Description and Operation

- ⇒ [M2.1 Mark 70 \(ABS/ASR\) Component Locations Assembly Overview", page 13](#)
- ⇒ [M2.2 Mark 60 EC \(ABS/EDL/ASR/ESP\) Assembly Overview", page 15](#)
- ⇒ [M2.3 malfunction Display via Indicator Lamps", page 17](#)
- ⇒ [M2.4 malfunction Display via Indicator Lamps", page 20](#)
- ⇒ [-2.5 ABS Mark 70 \(ABS/ASR\)", page 23](#)
- ⇒ [L2.6 lines, Connecting from Tandem Brake Master Cylinder to Hydraulic Unit ABS Mark 70 \(ABS/ASR\)", page 26](#)
- ⇒ [-2.7 ABS Mark 60 EC", page 27](#)
- ⇒ [L2.8 lines, Connecting from Master Brake Cylinder to Hydraulic Unit, ABS Mark 60 EC \(ABS/EDL/ASR/ESP\)", page 29](#)
- ⇒ [L2.14 lines, Connecting from Tandem Brake Master Cylinder to Hydraulic Unit, RHD ABS Mark 60 EC \(ABS/EDL/ASR/ESP\)", page 38](#)
- ⇒ [-2.9 Front Axle Speed Sensor", page 30](#)
- ⇒ [-2.10 Rear Axle Speed Sensor", page 31](#)

2.1 ABS Mark 70 (ABS/ASR) Component Locations Assembly Overview





1 - ABS Control Module - J104-

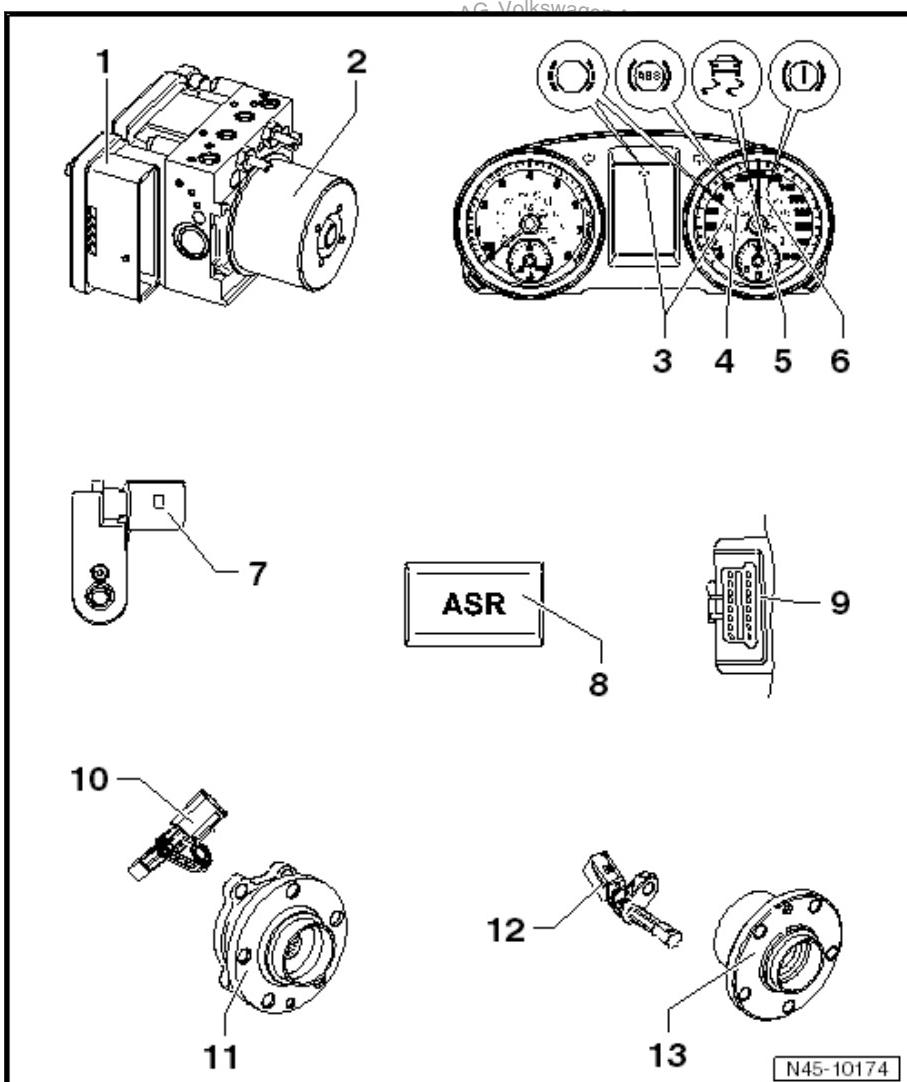
- Installed location: on the hydraulic unit in right of engine compartment
- Do not disconnect harness connector until after successful On Board Diagnostic (OBD). Turn off the ignition before disconnecting the connector.
- Removing and installing. Refer to [A3.1 BS Control Module J104 and ABS Hydraulic UnitN55, with ABS Mark 70 ABS/ASR](#), page 41 .

2 - ABS Hydraulic Unit -N55-

- Installed location: inside the engine compartment on the right side

The hydraulic unit consists of the components:

- ABS Hydraulic Pump - V64-
- Valve block (contains inlet and outlet valves)
- The ABS Hydraulic Pump -V64- and valve block must not be separated from one another.
- Removing and installing. Refer to [A3.1 BS Control Module J104 and ABS Hydraulic UnitN55, with ABS Mark 70 ABS/ASR](#), page 41 .



3 - Brake Pad Wear Indicator Lamp -K32-

- Component location: inside the instrument cluster
- Function. Refer to [M2.3 alfunction Display via Indicator Lamps](#), page 17 or [M2.1 ark 70 \(ABS/ASR\) Component Locations Assembly Overview](#), page 13 .

4 - ABS Indicator Lamp -K47-

- Component location: inside the instrument cluster
- Function. Refer to [M2.3 alfunction Display via Indicator Lamps](#), page 17 or [M2.1 ark 70 \(ABS/ASR\) Component Locations Assembly Overview](#), page 13 .

5 - Traction Control Indicator Lamp -K86-

- Component location: inside the instrument cluster
- Function. Refer to [M2.3 alfunction Display via Indicator Lamps](#), page 17 or [M2.1 ark 70 \(ABS/ASR\) Component Locations Assembly Overview](#), page 13 .

6 - Brake System Indicator Lamp -K118-

- Component location: inside the instrument cluster
- Function. Refer to [M2.3 alfunction Display via Indicator Lamps](#), page 17 or [M2.1 ark 70 \(ABS/ASR\) Component Locations Assembly Overview](#), page 13 .

7 - Brake Lamp Switch -F-



- Including the Brake Pedal Switch -F47-
- Installed location: on the master brake cylinder
- Removing and installing. Refer to [⇒ B4.3 Brake Lamp SwitchF](#), page 169 .

8 - ASR/ESP Button -E256-

- Component location: inside the center console

9 - Diagnostic Connection

- Component location: driver side footwell cover

10 - Right Front ABS Wheel Speed Sensor -G45-/Left Front ABS Wheel Speed Sensor -G47-

- Removing and installing. Refer to [⇒ -2.9.1 Front Axle Speed Sensor](#), page 30 .

11 - Wheel Bearing Unit

- The ABS sensor ring is installed in the wheel bearing

12 - Right Rear ABS Wheel Speed Sensor -G44-/ Left Rear ABS Wheel Speed Sensor -G46-

- Removing and installing. Refer to [⇒ -2.10.1 Rear Axle Speed Sensor, FWD](#), page 31 .

13 - Wheel Hub With Wheel Bearing

- The ABS sensor ring is installed in the wheel bearing

2.2 ABS Mark 60 EC (ABS/EDL/ASR/ESP) Assembly Overview



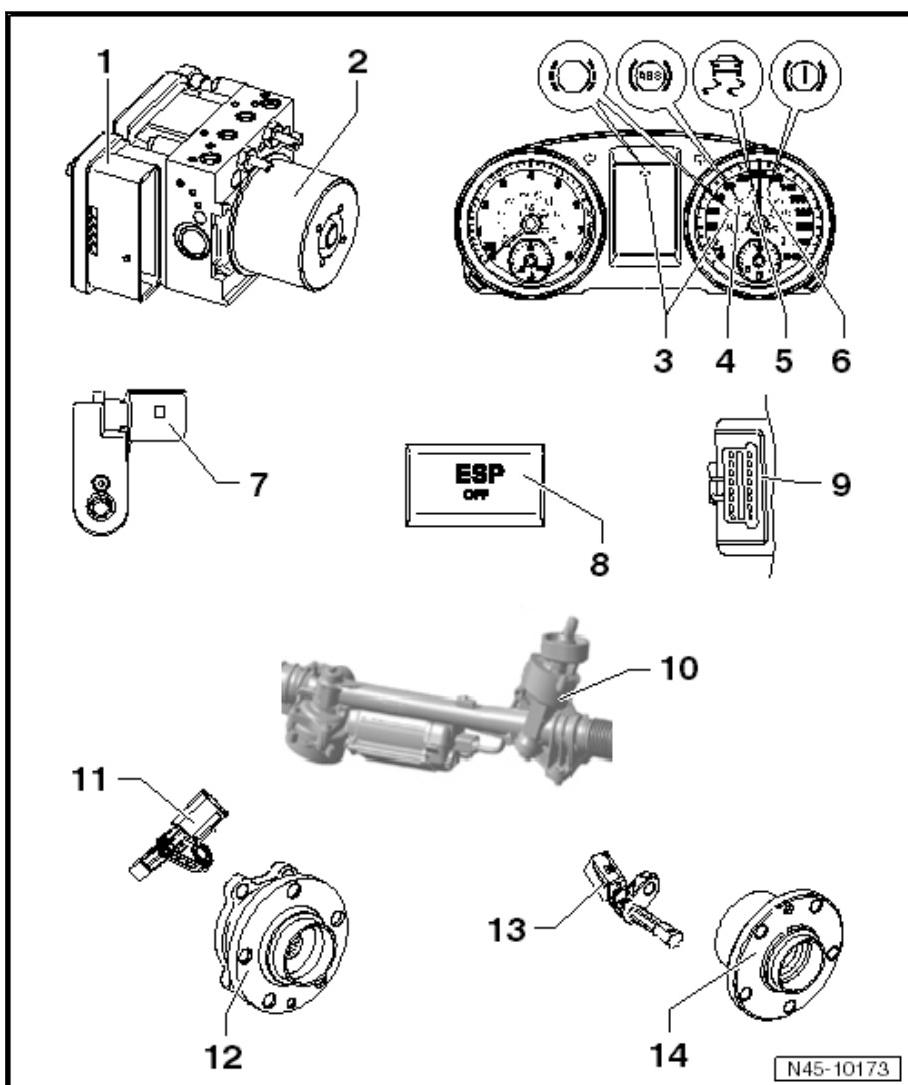


1 - ABS Control Module - J104-

- Installed location: on the hydraulic unit in right of engine compartment
- Do not disconnect harness connector until after successful On Board Diagnostic (OBD). Turn off the ignition before disconnecting the connector.

The following components are integrated inside the control module:

- ◆ Transverse Acceleration Sensor -G200-
- ◆ Rotation Rate Sensor - G202-
- ◆ Longitudinal Acceleration Sensor -G251- (depending on vehicle equipment)
- Removing and installing. Refer to [A3.1 BS Control Module J104 and ABS Hydraulic Unit N55, with ABS Mark 70 ABS/ASR](#), page 41 or [A3.4 BS Control Module J104 and ABS Hydraulic Unit N55, with ABS Mark 60](#), page 49 .



2 - ABS Hydraulic Unit -N55-

- Installed location: inside the engine compartment on the right side

The hydraulic unit consists of the components:

- ◆ ABS Hydraulic Pump -V64-
- ◆ Brake Pressure Sensor 1 -G201-
- ◆ Valve block (contains inlet and outlet valves)
 - The ABS Hydraulic Pump -V64- and valve block must not be separated from one another.
 - Removing and installing. Refer to [A3.4 BS Control Module J104 and ABS Hydraulic Unit N55, with ABS Mark 60](#), page 49 .

3 - Brake Pad Wear Indicator Lamp -K32-

- Component location: inside the instrument cluster
- Function. Refer to [M2.3 alfunction Display via Indicator Lamps](#), page 17 or [M2.1 ark 70 \(ABS/ASR\) Component Locations Assembly Overview](#), page 13 .

4 - ABS Indicator Lamp -K47-

- Component location: inside the instrument cluster
- Function. Refer to [M2.3 alfunction Display via Indicator Lamps](#), page 17 or [M2.1 ark 70 \(ABS/ASR\) Component Locations Assembly Overview](#), page 13 .

5 - ASR/ESP Indicator Lamp -K155-

- Only on vehicles with ABS/EDL/ASR/ESP
- Component location: inside the instrument cluster



- Function. Refer to [M2.3 Malfunction Display via Indicator Lamps](#), page 17 or [M2.1 Fahrzeug 70 \(ABS/ASR\) Component Locations Assembly Overview](#), page 13.

6 - Brake System Indicator Lamp -K118-

- Component location: inside the instrument cluster
- Function. Refer to [M2.3 Malfunction Display via Indicator Lamps](#), page 17 or [M2.1 Fahrzeug 70 \(ABS/ASR\) Component Locations Assembly Overview](#), page 13.

7 - Brake Lamp Switch -F-

- Including the Brake Pedal Switch -F47-
- Installed location: on the master brake cylinder
- Removing and installing. Refer to [B4.3 Brake Lamp Switch F](#), page 169.

8 - ASR/ESP Button -E256-

- Only on vehicles with ABS/EDL/ASR/ESP
- Component location: inside the center console

9 - Diagnostic Connection

- Component location: driver side footwell cover

10 - Steering Angle Sensor -G85-



The Steering Angle Sensor -G85- is installed in the steering gear on vehicles with electro-mechanical power steering.

- Installed location: inside the steering gear
- Removing and installing. Refer to [S3.10.1 Steering Angle Sensor G85](#), page 65.

11 - Right/Left Front ABS Wheel Speed Sensor -G45-/G47-

- Removing and installing. Refer to [-2.9.1 Front Axle Speed Sensor](#), page 30.

12 - Wheel Bearing Unit

- The ABS sensor ring is installed in the wheel bearing

13 - Right/Left Rear ABS Wheel Speed Sensor -G44-/G46-

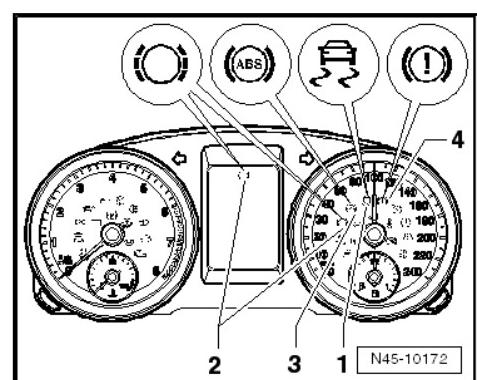
- Removing and installing (FWD). Refer to [-2.10.1 Rear Axle Speed Sensor, FWD](#), page 31.
- Removing and installing (AWD). Refer to [-2.10.2 Rear Axle Speed Sensor, AWD](#), page 32.

14 - Wheel Hub With Wheel Bearing

- The ABS sensor ring is installed in the wheel bearing

2.3 ABS/ASR Malfunction Display via Indicator Lamps

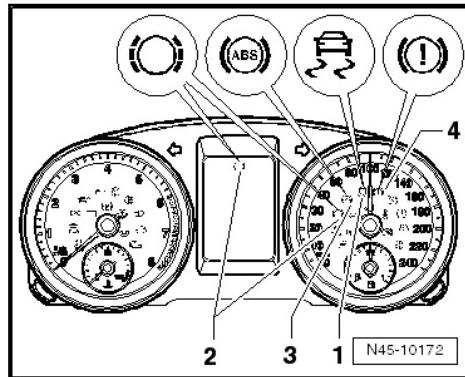
Warning lamps





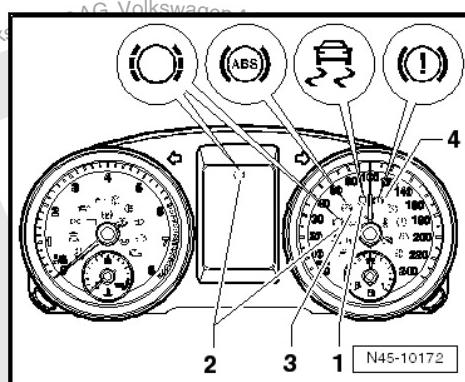
Item	Designation
1	Traction Control Indicator Lamp -K86-
2	Brake Pad Wear Indicator Lamp -K32-, different component locations
3	ABS Indicator Lamp -K47-
4	Brake System Indicator Lamp -K118-

Brake Pad Wear Indicator Lamp -K32-



- ◆ If the indicator lamp does not go out after the ignition is switched on, it could be caused by the following:
 - a- The brake pads could be worn; check the brake pads on the front- and rear axles. Worn brake pads should be replaced.
 - b- There is a malfunction in the wiring guide. Refer to ⇒ Wiring diagrams, Troubleshooting & Component locations.

ABS Indicator Lamp -K47-



- ◆ If the ABS Indicator Lamp -K47- -3- does not go out after the ignition is switched on and the test sequence is complete, the malfunction could be caused by the following:
 - a- Voltage supply is under 10 volts.
 - b- There is an ABS malfunction.



WARNING

The ABS system stays switched off if there is an ABS fault -b-, whereas the standard brake system remains fully functional.



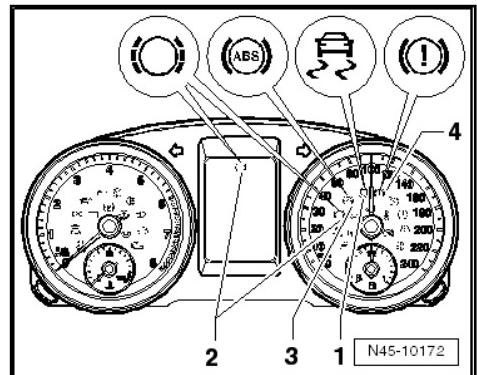
-c- There was a malfunction since the last vehicle start.

In this case the ABS indicator lamp will go out after the engine is restarted and the vehicle speed exceeds 20 km/h.

-d- The connection from the instrument cluster to the ABS Control Module -J104- is interrupted. Refer to ⇒ Wiring diagrams, Troubleshooting & Component locations.

-e- The instrument cluster is faulty.

ABS Indicator Lamp -K47- and Brake System Indicator Lamp -K118-



◆ If the ABS Indicator Lamp -K47- -3- goes out but the Brake System Indicator Lamp -K118- -4- lights up, the cause of the malfunction may be:

-a- Parking brake is engaged.

-b- Brake fluid level is too low (indicator lamp blinks).

Three warning tones will sound after switching on the ignition.

-c- There is a malfunction in the wiring guide to the Brake System Indicator Lamp -K118-. Refer to ⇒ Wiring diagrams, Troubleshooting & Component locations.

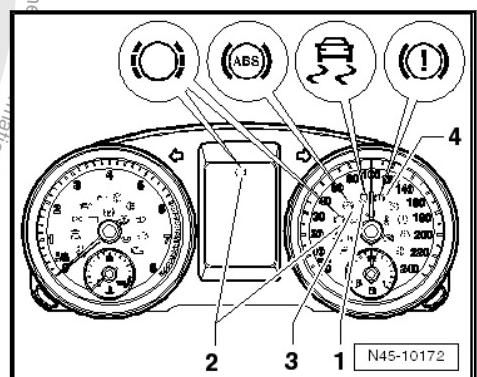
◆ If the ABS Indicator Lamp -K47- -3- and the Brake System Indicator Lamp -K118- -4- light up, the ABS is faulty. A change in braking behavior must be checked.



WARNING

After the ABS Indicator Lamp -K47- and Brake System Indicator Lamp -K118- light up, the rear wheels may lock prematurely when braking.

Traction Control Indicator Lamp -K86-





- ◆ If the Traction Control Indicator Lamp -K86- -1- does not go out after the ignition is switched on and the test sequence is complete, the causes of the malfunction may be:

There is a malfunction present that only affects the ASR. The ABS and electronic brake booster safety systems are still completely functional. Check the DTC memory. Refer to Vehicle Diagnostic Tester.

- a- Short circuit to positive in ASR/ESP Button -E256-.
- b- Malfunction in the activation of the Traction Control Indicator Lamp -K86-. Refer to → Wiring diagrams, Troubleshooting & Component locations.
- c- The traction control (ASR) was turned off by the ASR/ESP Button -E256-.

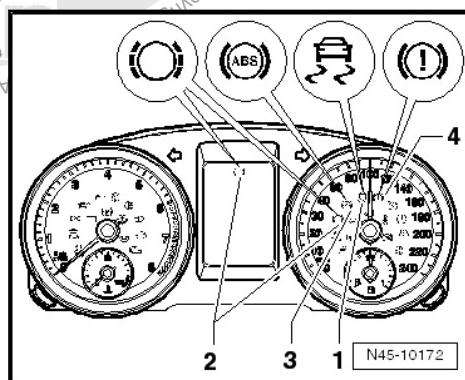
If the Traction Control Indicator Lamp -K86- Blinks While Driving, the ASR System is Operating in Regulated Mode.

- ◆ If the Traction Control Indicator Lamp -K86- -1- did not light up during the self-test, the following malfunction is present:

- a- The Traction Control Indicator Lamp -K86- is faulty. Refer to Vehicle Diagnostic Tester to perform an electrical test.

2.4 ABS/EDL/ASR/ESP Malfunction Display via Indicator Lamps

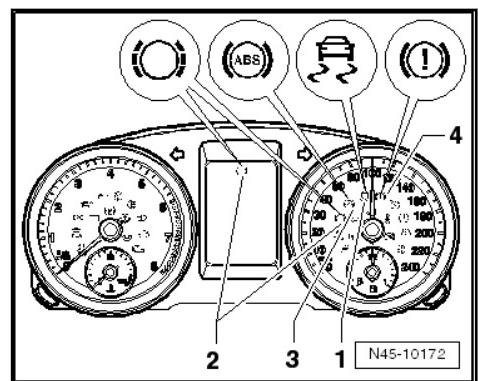
Warning lamps



Item	Designation
1	ASR/ESP Indicator Lamp -K155-
2	Brake Pad Wear Indicator Lamp -K32-, different component locations
3	ABS Indicator Lamp -K47-
4	Brake System Indicator Lamp -K118-

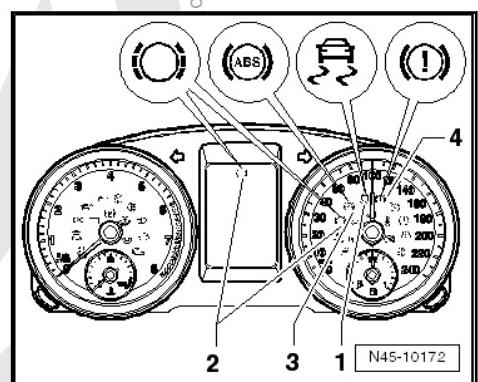


Brake Pad Wear Indicator Lamp -K32-



- ◆ If the indicator lamp does not go out after the ignition is switched on, it could be caused by the following:
- ◆ If it comes on while driving, it could be caused by the following.
 - a- The brake pads could be worn; check the brake pads on the front- and rear axles. Worn brake pads should be replaced.
 - b- There is a malfunction in the wiring guide. Refer to ⇒ Wiring diagrams, Troubleshooting & Component locations.

ABS Indicator Lamp -K47-



- ◆ If the ABS Indicator Lamp -K47- -3- does not go out after the ignition is switched on and the test sequence is complete, the malfunction could be caused by the following:
 - a- Voltage supply is under 10 volts.
 - b- There is an ABS malfunction.



WARNING

The ABS system stays switched off if there is an ABS fault -b-, whereas the standard brake system remains fully functional.

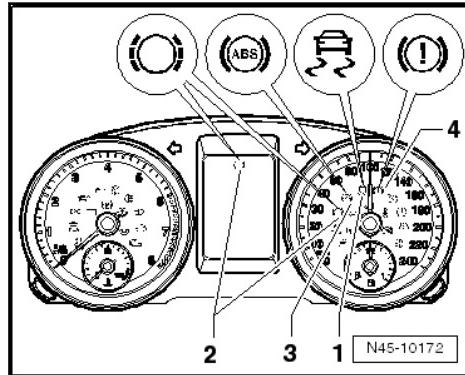
- c- There was a malfunction since the last vehicle start.

In this case the ABS indicator lamp will go out after the engine is restarted and the vehicle speed exceeds 20 km/h.

- d- The connection from instrument cluster to the ABS Control Module -J104- is interrupted. Refer to ⇒ Wiring diagrams, Troubleshooting & Component locations.
- e- The instrument cluster is faulty.



ABS Indicator Lamp -K47- and Brake System Indicator Lamp -K118-



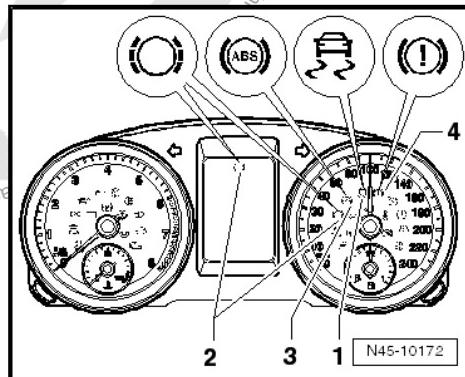
- ◆ If the ABS Indicator Lamp -K47- -3- goes out but the Brake System Indicator Lamp -K118- -4- lights up, the cause of the malfunction may be:
 - a- Parking brake is engaged.
 - b- Brake fluid level is too low (indicator lamp blinks).
- Three warning tones will sound after switching on the ignition.
- c- Malfunction in the wiring guide to the Brake System Indicator Lamp -K118-. Refer to → Wiring diagrams, Troubleshooting & Component locations.
- ◆ If the ABS Indicator Lamp -K47- -3- and the Brake System Indicator Lamp -K118- -4- light up, the ABS is faulty. A change in braking behavior must be checked.



WARNING

After the ABS Indicator Lamp -K47- and Brake System Indicator Lamp -K118- light up, the rear wheels may lock prematurely when braking.

ASR/ESP Indicator Lamp -K155-



- ◆ If the ASR/ESP Indicator Lamp -K155- -1- does not go out after the ignition is switched on and the test sequence is complete, the cause of the malfunction may be:

There is a malfunction present that only affects the ASR/ESP. The ABS/EDL and electronic brake booster safety systems are still completely functional. Check the DTC memory. Refer to Vehicle Diagnostic Tester.

- a- Short circuit to positive in ASR/ESP Button -E256-.



-b- a fault in the activation of the ASR/ESP Indicator Lamp
-K155- ⇒ Wiring diagrams, Troubleshooting & Component locations

-c- The ASR/ESP Button -E256- has switched off the ASR/ESP system.

**If the ASR/ESP Indicator Lamp -K155- Flashes While Driving,
the ASR or ESP Systems are Regulating the System.**

◆ If the ASR/ESP Indicator Lamp -K155- did not light up during the self-test, the following malfunction is present:

-a- The ASR/ESP Indicator Lamp -K155- is faulty. Using the Vehicle Diagnostic Tester. Refer to Vehicle Diagnostic Tester to perform an electrical test.

2.5 Overview- ABS Mark 70 (ABS/ASR)



1 - ABS Control Module - J104-

- Removing and installing. Refer to [A3.1 BS Control Module J104 and ABS Hydraulic Unit N55, with ABS Mark 70 ABS/ASR](#), page 41.

2 - ABS Hydraulic Unit - N55-

- Removing and installing. Refer to [A3.1 BS Control Module J104 and ABS Hydraulic Unit N55, with ABS Mark 70 ABS/ASR](#), page 41.

3 - Brake Line

- 14 Nm
- Brake master cylinder/primary piston circuit to hydraulic unit
- Identification: Tube fitting with threads M12 x 1

4 - Brake Line

- 14 Nm
- Master brake cylinder/secondary piston circuit to hydraulic unit
- Identification: Tube fitting with threads M12 x 1

5 - Brake Line

- 14 Nm
- To the left front brake caliper
- Identification: Tube fitting with threads M10 x 1

6 - Brake Line

- 14 Nm
- To the right front brake caliper
- Identification: Tube fitting with threads M12 x 1

7 - Brake Line

- 14 Nm
- To the left rear brake caliper
- Identification: Tube fitting with threads M12 x 1

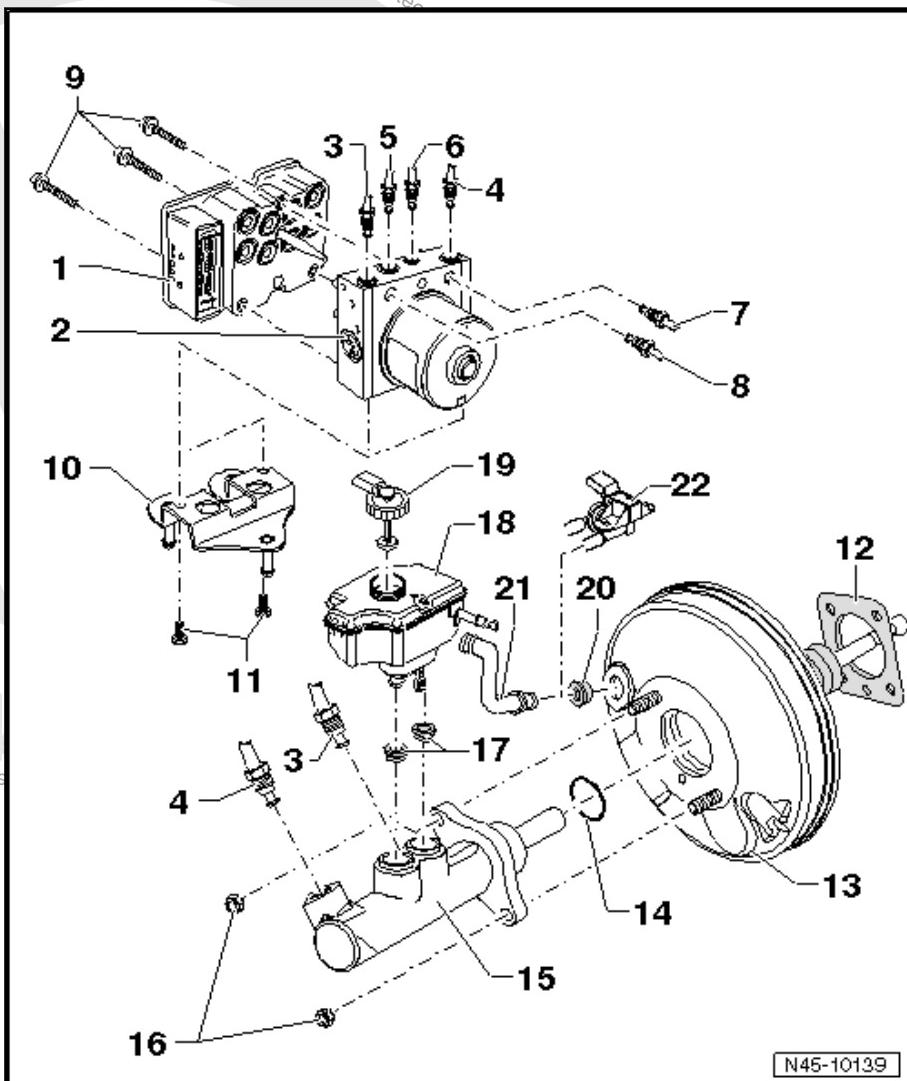
8 - Brake Line

- 14 Nm
- To the right rear brake caliper
- Identification: Tube fitting with threads M10 x 1

9 - TORX® Socket Bolt

- 5.5 Nm
- Use new bolts.

10 - Bracket





11 - Hex Bolt

- 8 Nm

12 - Seal

- For the brake booster

13 - Brake Booster

- On gasoline engines, the required vacuum is supplied either by the intake manifold or by a mechanical vacuum pump.
- Some gasoline vehicles with a DSG transmission, but not having an hydraulic brake booster, have a Brake System Vacuum Pump -V192-. Refer to [⇒ 2.5 Brake System Vacuum PumpV192, Gasoline Engine](#), page 149 .
- Diesel engines have a vacuum pump to produce the vacuum. Refer to [⇒ B2.4.2 ooster Vacuum Pump, Diesel Vehicles](#), page 148 .
- Functional check:
 - With engine switched off, depress brake pedal firmly several times. To exhaust the vacuum in the unit.
 - Depress and hold brake pedal with average foot pressure and start engine. If brake booster is working properly, pedal will be felt to give noticeably under foot (booster assistance becomes effective).
- If malfunctioning: replace as complete unit.
- Removing and installing. Refer to [⇒ B4.6 ooster](#), page 205 .

14 - Seal

15 - Tandem Brake Master Cylinder

- Cannot be serviced. Replace as complete unit if malfunctioning.
- Removing and installing. Refer to [⇒ M4.5 aster Cylinder](#), page 186 .

16 - Hex Nut

- 25 Nm
- Always replace if removed

17 - Sealing Plug

- Moisten with brake fluid and press into brake fluid reservoir

18 - Brake Fluid Reservoir

19 - Cap

20 - Sealing Plug

- Connection for vacuum hose

21 - Vacuum Hose

- Insert into brake booster

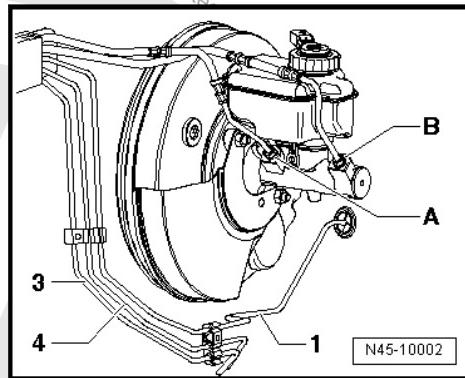
22 - Brake Booster Pressure Sensor -G294-

- For vehicles with an FSI engine without a hydraulic brake booster
- Removing and installing. Refer to [⇒ V4.7 acuum SensorG608](#), page 247 .



2.6 Brake Lines, Connecting from Tandem Brake Master Cylinder to Hydraulic Unit ABS Mark 70 (ABS/ASR)

On Tandem Master Brake Cylinder:



A - Master brake cylinder primary piston circuit to hydraulic unit

- Identification: Tube fitting with threads M10 x 1

B - Master brake cylinder secondary piston circuit to hydraulic unit

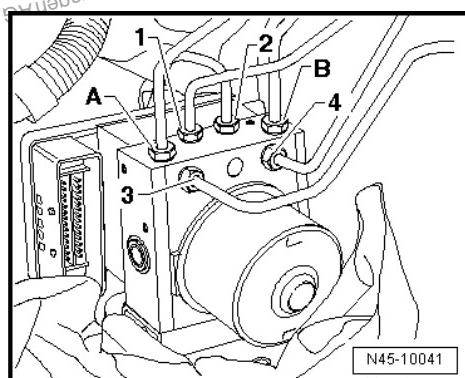
- Identification: Tube fitting with threads M12 x 1

1 - Hydraulic unit to left front brake caliper

3 - Hydraulic unit to right rear brake caliper

4 - Hydraulic unit to left rear brake caliper

On Hydraulic Unit:



A - Hydraulic unit to master brake cylinder primary piston circuit

- Identification: Tube fitting with threads M12 x 1.

B - Hydraulic unit to master brake cylinder secondary piston circuit

- Identification: Tube fitting with threads M12 x 1

1 - Hydraulic unit to left front brake caliper

- Identification: Tube fitting with threads M10 x 1

2 - Hydraulic unit to right front brake caliper

- Identification: Tube fitting with threads M12 x 1

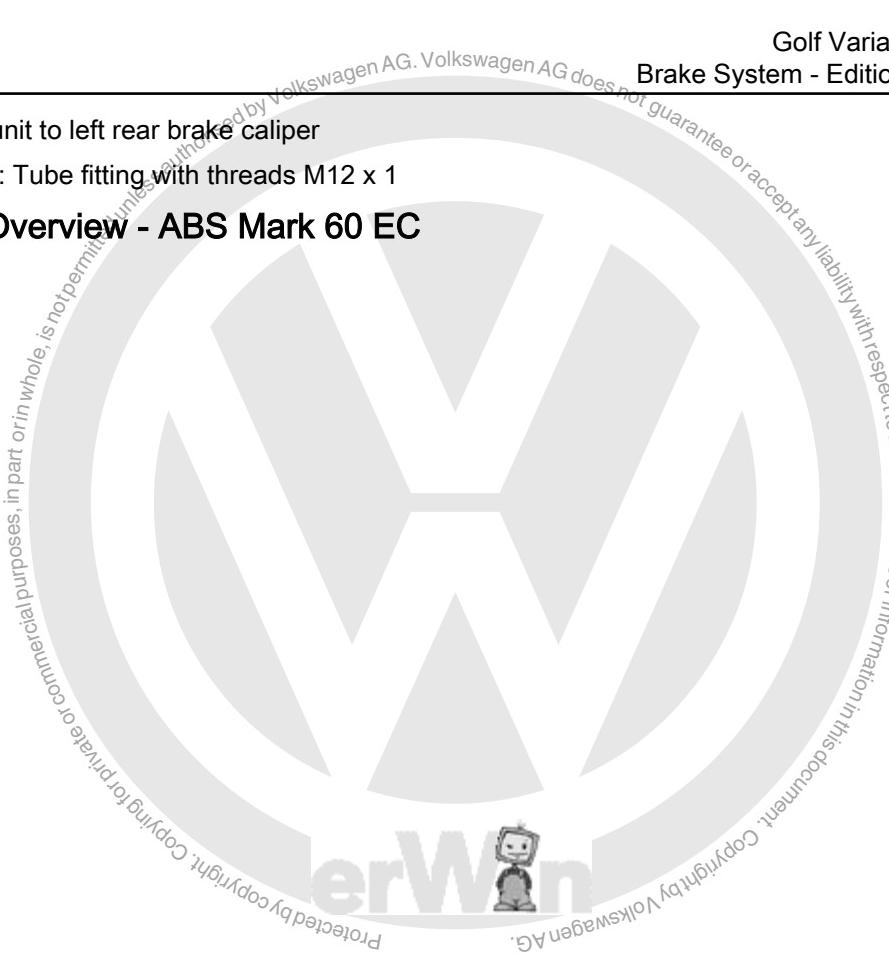
3 - Hydraulic unit to right rear brake caliper

- Identification: Tube fitting with threads M10 x 1



- 4 - Hydraulic unit to left rear brake caliper
- Identification: Tube fitting with threads M12 x 1

2.7 Overview - ABS Mark 60 EC





1 - ABS Control Module - J104-

- Removing and installing. Refer to [A3.4 BS Control Module J104 and ABS Hydraulic Unit N55, with ABS Mark 60", page 49.](#)

2 - TORX® Socket Bolt

- 2 Nm + 0.8 Nm
- Use new bolts.

3 - ABS Hydraulic Unit -N55-

- Removing and installing. Refer to [A3.4 BS Control Module J104 and ABS Hydraulic Unit N55, with ABS Mark 60", page 49.](#)

4 - Brake Line

- 14 Nm
- Brake master cylinder/primary piston circuit to hydraulic unit
- Identification: 6.5 mm diameter and tube fitting with a M12 x 1 thread

5 - Brake Line

- 14 Nm
- Master brake cylinder/secondary piston circuit to hydraulic unit
- Identification: 6.5 mm diameter and tube fitting with a M12 x 1 thread

6 - Brake Line

- 14 Nm
- To the left front brake caliper
- Identification: 5.25 mm diameter and tube fitting with a M10 x 1 thread

7 - Brake Line

- 14 Nm
- To the right front brake caliper
- Identification: 5.25 mm diameter and tube fitting with a M12 x 1 thread

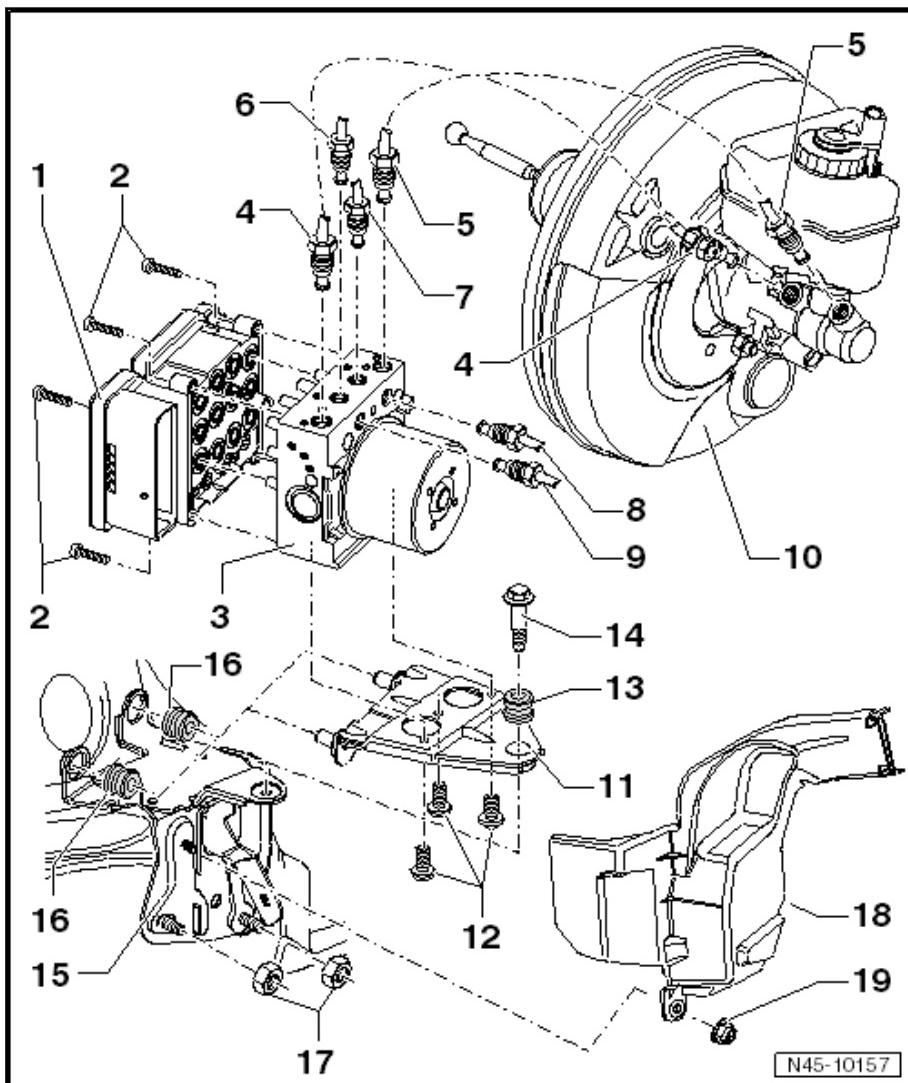
8 - Brake Line

- 14 Nm
- To the left rear brake caliper
- Identification: 5.25 mm diameter and tube fitting with a M12 x 1 thread

9 - Brake Line

- 14 Nm
- To the right rear brake caliper
- Identification: 5.25 mm diameter and tube fitting with a M10 x 1 thread

10 - Brake Booster





- Refer to [C3.1.5 reating with Hand Vacuum Pump VAS6213 ", page 158](#)
- Removing and installing. Refer to [B4.6 ooster", page 205](#).

11 - Bracket

- after installing, make sure it fits properly

12 - Bolt

- 8 Nm

13 - Rubber Buffer

14 - Hex Fitting Bolt

- 8 Nm

15 - Bracket

16 - Rubber Buffer

- When installing the bracket, make sure the rubber buffers are not pushed out of the bracket.

17 - Nut

- 20 Nm

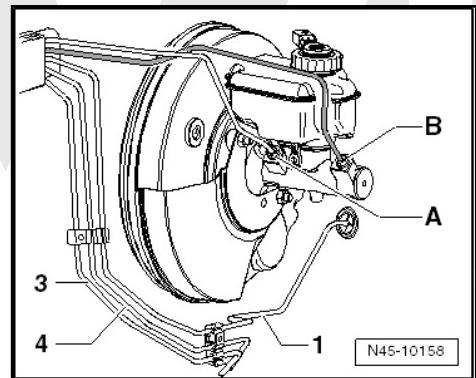
18 - Heat Shield

19 - Nut

- 8 Nm

2.8 Brake Lines, Connecting from Master Brake Cylinder to Hydraulic Unit, ABS Mark 60 EC (ABS/EDL/ASR/ESP)

On the Brake Master Cylinder:



A - Master brake cylinder primary piston circuit to hydraulic unit

- Identification: 6.5 mm diameter and tube fitting with a M12 x 1 thread

B - Master brake cylinder secondary piston circuit to hydraulic unit

- Identification: 6.5 mm diameter and tube fitting with a M12 x 1 thread

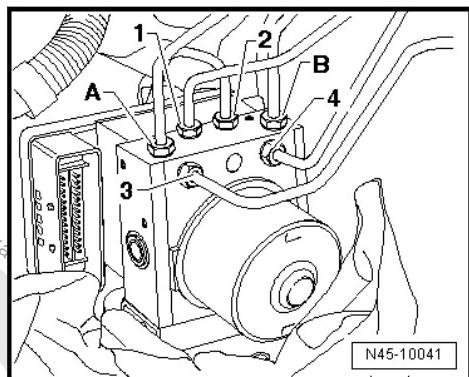
1 - Hydraulic unit to left front brake caliper

3 - Hydraulic unit to right rear brake caliper

4 - Hydraulic unit to left rear brake caliper



On Hydraulic Unit:



A - Hydraulic unit to master brake cylinder primary piston circuit

- Identification: 6.5 mm diameter and tube fitting with a M12 x 1 thread

B - Hydraulic unit to master brake cylinder secondary piston circuit

- Identification: 6.5 mm diameter and tube fitting with a M12 x 1 thread

1 - Hydraulic unit to left front brake caliper

- Identification: 5.25 mm diameter and tube fitting with a M10 x 1 thread

2 - Hydraulic unit to right front brake caliper

- Identification: 5.25 mm diameter and tube fitting with a M12 x 1 thread

3 - Hydraulic unit to right rear brake caliper

- Identification: 5.25 mm diameter and tube fitting with a M10 x 1 thread

4 - Hydraulic unit to left rear brake caliper

- Identification: 5.25 mm diameter and tube fitting with a M12 x 1 thread

2.9 Overview - Front Axle Speed Sensor

⇒ [-2.9.1 Front Axle Speed Sensor", page 30](#)

2.9.1 Overview - Front Axle Speed Sensor



1 - ABS Speed Sensor

- Before inserting sensor, clean inner surface of the hole and coat with Hot Bolt Paste -G 052 112 A3-.
- Removing and installing. Refer to [F3.8.1 front ABS Wheel Speed Sensor G45/G47](#), page 63 .

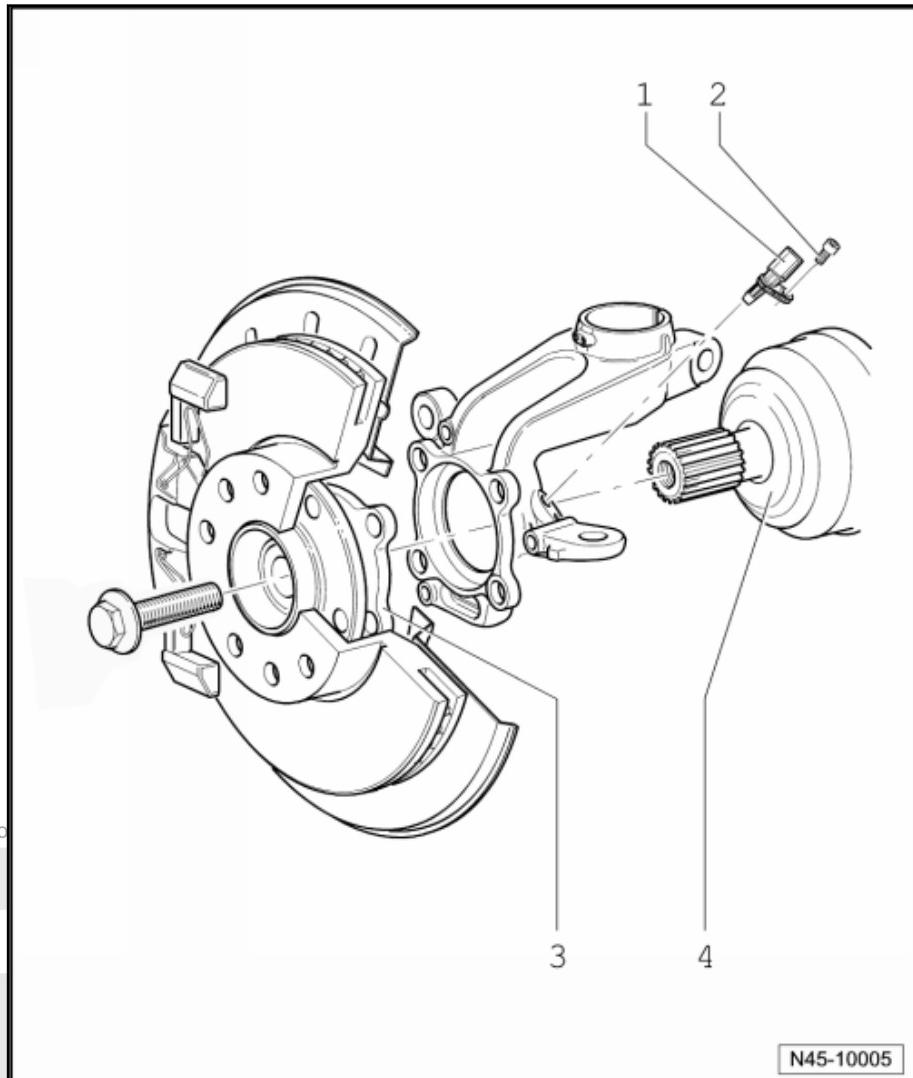
2 - Hex Socket Bolt

- 8 Nm

3 - Wheel Bearing/Wheel Bearing Unit

- The ABS sensor ring is installed in the wheel bearing

4 - Driveshaft



2.10 Overview - Rear Axle Speed Sensor

[⇒ 2.10.1 Rear Axle Speed Sensor, FWD](#), page 31

[⇒ 2.10.2 Rear Axle Speed Sensor, AWD](#), page 32

2.10.1 Overview - Rear Axle Speed Sensor, FWD



1 - ABS Speed Sensor

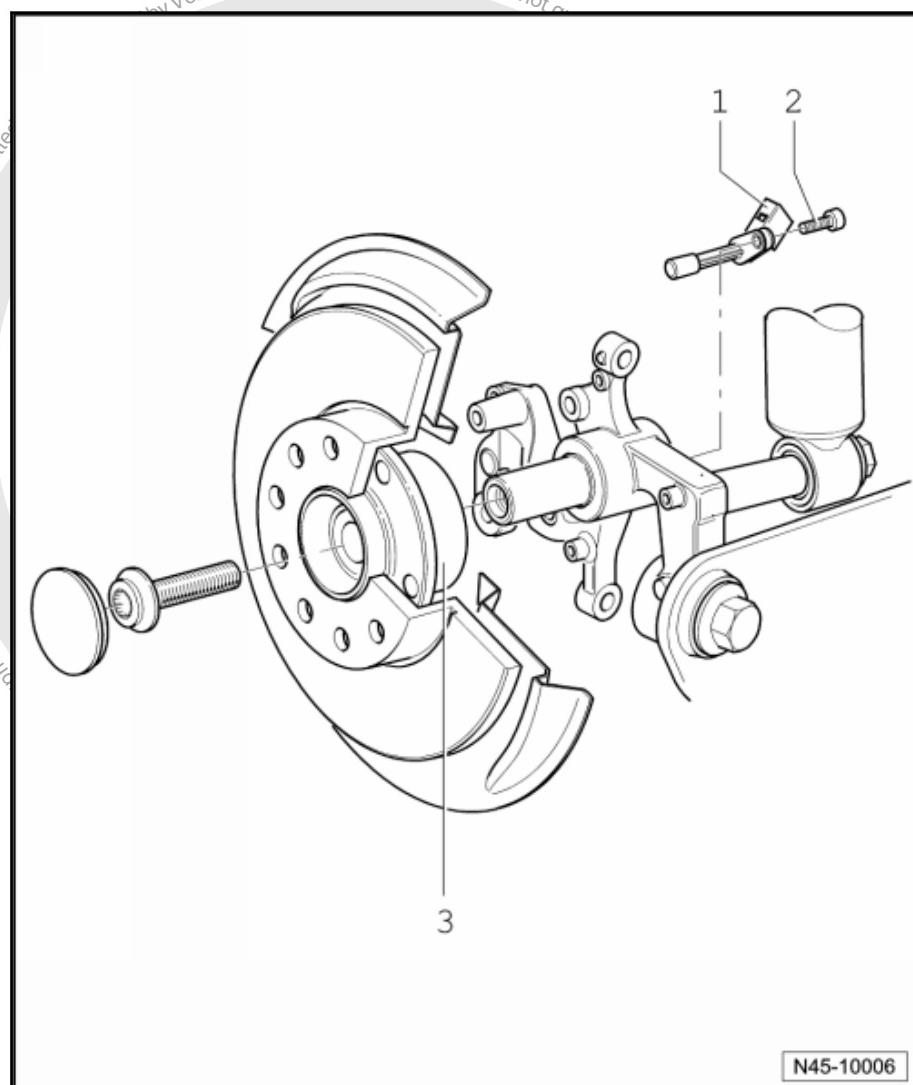
- Before inserting sensor, clean inner surface of the hole and coat with Hot Bolt Paste -G 052 112 A3-.
- Removing and installing. Refer to [R3.9.1 rear ABS Wheel Speed Sensor G44/G46, FWD](#), page 64 .

2 - Hex Socket Bolt

- 8 Nm

3 - Wheel Bearing/Wheel Bearing Unit

- The ABS sensor ring is installed in the wheel bearing



2.10.2 Overview - Rear Axle Speed Sensor, AWD



1 - ABS Speed Sensor

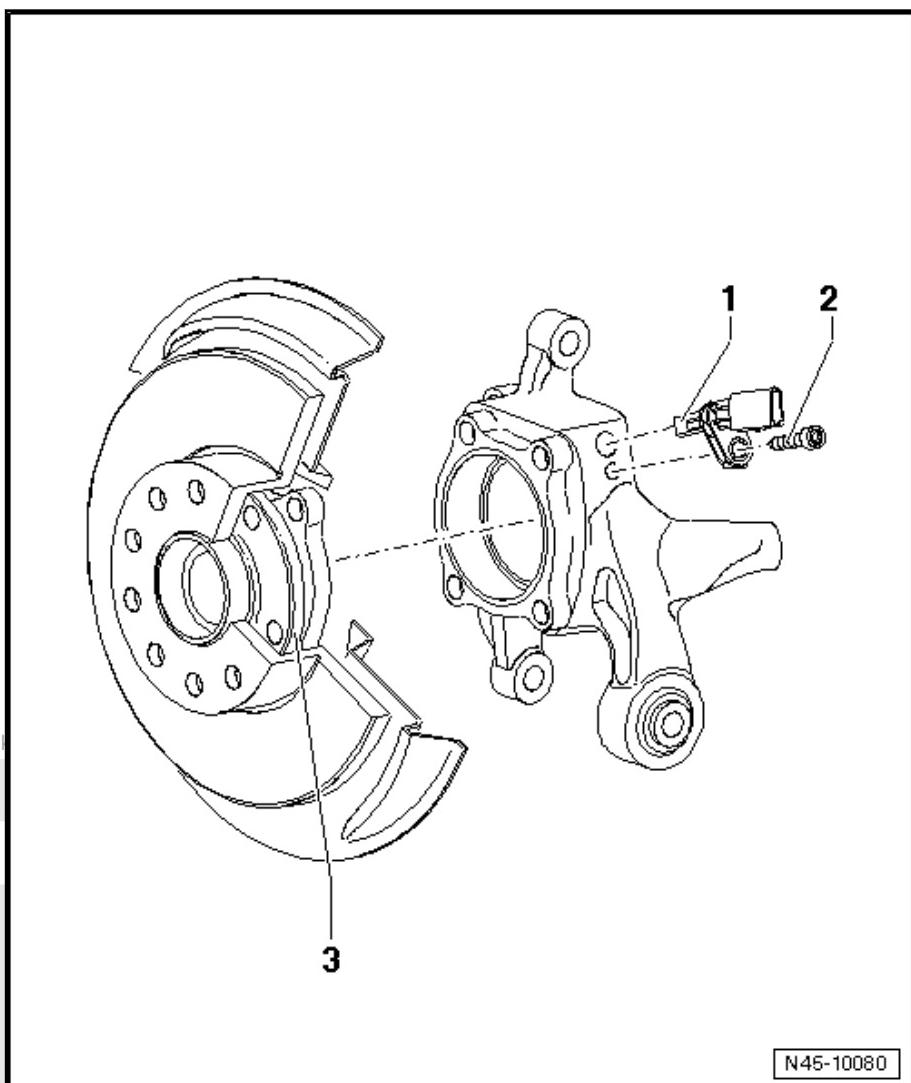
- Before inserting sensor, clean inner surface of the hole and coat with Hot Bolt Paste -G 052 112 A3-.
- Removing and installing. Refer to [R3.9.2 ear ABS Wheel Speed Sensor G44/G46, AWD](#), page 64 .

2 - Hex Socket Bolt

- 8 Nm

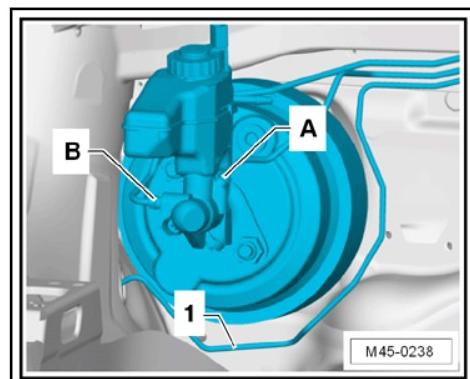
3 - Wheel Bearing/Wheel Bearing Unit

- The ABS sensor ring is installed in the wheel bearing



2.11 Brake Lines, Connecting from Tandem Brake Master Cylinder to Hydraulic Unit, RHD ABS Mark 70 (ABS/ASR)

On tandem master brake cylinder:



A - Master brake cylinder primary piston circuit to hydraulic unit

- Identification: Tube fitting with threads M10 x 1

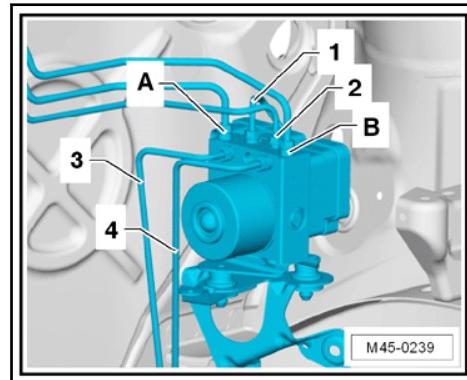


B - Master brake cylinder secondary piston circuit to hydraulic unit

- Identification: Tube fitting with threads M12 x 1

1 - Hydraulic unit to right front brake caliper

On hydraulic unit:



A - Hydraulic unit to master brake cylinder primary piston circuit

- Identification: Tube fitting with threads M12 x 1.

B - Hydraulic unit to master brake cylinder secondary piston circuit

- Identification: Tube fitting with threads M12 x 1

1 - Hydraulic unit to left front brake caliper

- Identification: Tube fitting with threads M10 x 1

2 - Hydraulic unit to right front brake caliper

- Identification: Tube fitting with threads M12 x 1

3 - Hydraulic unit to right rear brake caliper

- Identification: Tube fitting with threads M10 x 1

4 - Hydraulic unit to left rear brake caliper

- Identification: Tube fitting with threads M12 x 1

2.12 Overview - ABS Mark 60 EC (ABS/EDL/ASR/ESP), RHD

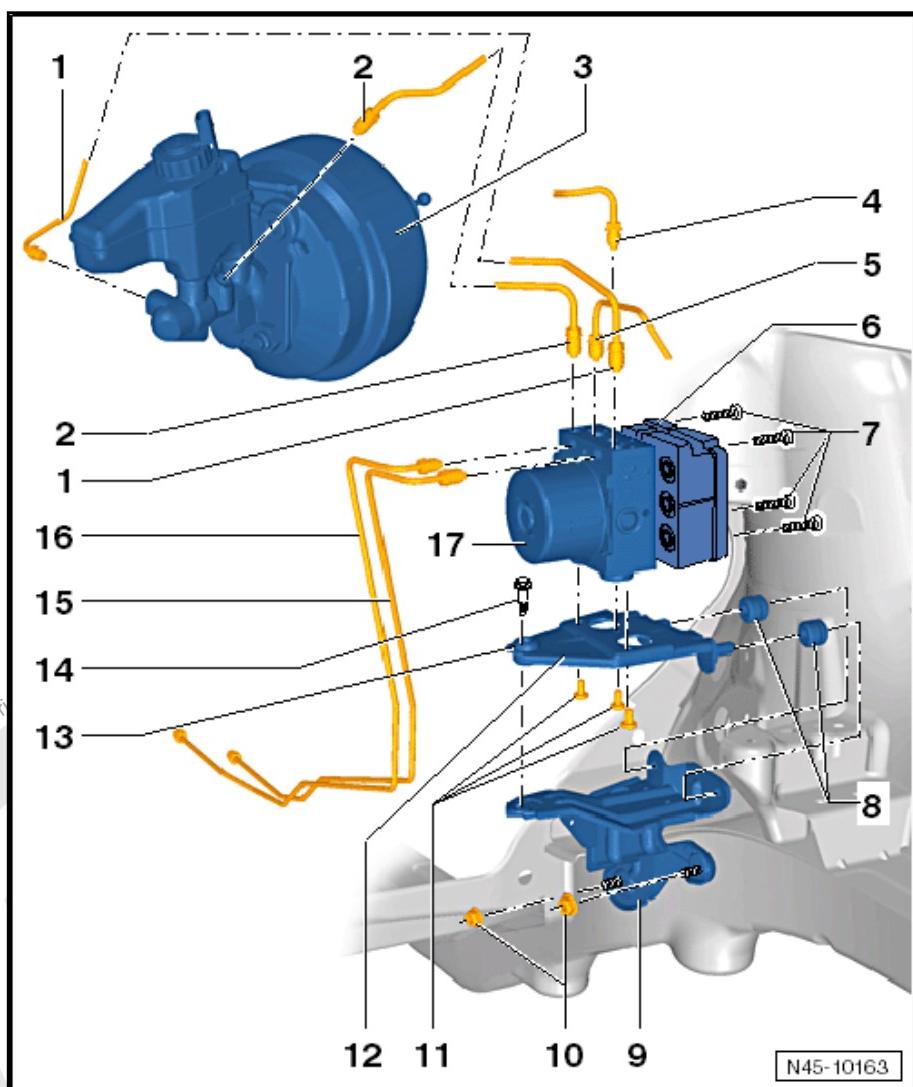


1 - Brake line

- Master brake cylinder/secondary piston circuit to hydraulic unit
- Identification: 6.5 mm diameter and tube fitting with a M12 x 1 thread
- Brake lines, connecting. Refer to [L2.14 ines, Connecting from Tandem Brake Master Cylinder to Hydraulic Unit, RHD ABS Mark 60 EC \(ABS/EDL/ASR/ESP\)", page 38](#).
- 14 Nm

2 - Brake line

- Brake master cylinder/primary piston circuit to hydraulic unit
- Identification: 6.5 mm diameter and tube fitting with a M12 x 1 thread
- Brake lines, connecting. Refer to [L2.14 ines, Connecting from Tandem Brake Master Cylinder to Hydraulic Unit, RHD ABS Mark 60 EC \(ABS/EDL/ASR/ESP\)", page 38](#).
- 14 Nm



3 - Brake Booster

- Overview. Refer to [-2.3 Brake Booster/Brake Master Cylinder", page 141](#).
- Removing and installing. Refer to [B4.6 ooster", page 205](#).

4 - Brake line

- To the right front brake caliper
- Identification: 5.25 mm diameter and tube fitting with a M12 x 1 thread
- Brake lines, connecting. Refer to [L2.14 ines, Connecting from Tandem Brake Master Cylinder to Hydraulic Unit, RHD ABS Mark 60 EC \(ABS/EDL/ASR/ESP\)", page 38](#).
- 14 Nm

5 - Brake line

- To the left front brake caliper
- Identification: 5.25 mm diameter and tube fitting with a M10 x 1 thread
- Brake lines, connecting. Refer to [L2.14 ines, Connecting from Tandem Brake Master Cylinder to Hydraulic Unit, RHD ABS Mark 60 EC \(ABS/EDL/ASR/ESP\)", page 38](#).
- 14 Nm

6 - ABS Control Module -J104-

- Removing and installing. Refer to [A3.5 BS Control Module J104 and ABS Hydraulic Unit N55, with ABS Mark 60", page 55](#).

7 - TORX® socket bolt

- Use new bolts.



- 2 Nm + 0.8 Nm

8 - Rubber buffer

- When installing the mount, make sure the rubber insulation does not push out of the bracket.

9 - Bracket

10 - Hex nut

- 20 Nm

11 - TORX® bolt

- 8 Nm

12 - Bracket

- Spray with silicone lubricant D 007 000 A2 before installing the rubber bushings -item 8- [⇒ Item 8 \(page 36\)](#)

- after installing, make sure it fits properly

13 - Rubber buffer

14 - Hex fitting bolt

- 8 Nm

15 - Brake line

- To the left rear brake caliper
- Identification: 5.25 mm diameter and tube fitting with a M12 x 1 thread
- Brake lines, connecting. Refer to [⇒ L2.14 ines, Connecting from Tandem Brake Master Cylinder to Hydraulic Unit, RHD ABS Mark 60 EC \(ABS/EDL/ASR/ESP\)", page 38](#).
- 14 Nm

16 - Brake line

- To the right rear brake caliper
- Identification: 5.25 mm diameter and tube fitting with a M10 x 1 thread
- Brake lines, connecting. Refer to [⇒ L2.14 ines, Connecting from Tandem Brake Master Cylinder to Hydraulic Unit, RHD ABS Mark 60 EC \(ABS/EDL/ASR/ESP\)", page 38](#).
- 14 Nm

17 - ABS Hydraulic Unit -N55-

- Removing and installing. Refer to [⇒ A3.5 BS Control Module J104 and ABS Hydraulic Unit N55, with ABS Mark 60", page 55](#).

2.13 Overview - ABS Mark 70 (ABS/ASR), RHD



1 - Brake line

- Master brake cylinder/secondary piston circuit to hydraulic unit
- Identification: tube fitting with threads M 12 x 1
- Brake lines, connecting. Refer to [L2.11 lines, Connecting from Tandem Brake Master Cylinder to Hydraulic Unit, RHD ABS Mark 70 \(ABS/ASR\)", page 33 .](#)
- 14 Nm

2 - Brake line

- Brake master cylinder/primary piston circuit to hydraulic unit
- Identification: tube fitting with threads M 10 x 1
- Brake lines, connecting. Refer to [L2.11 lines, Connecting from Tandem Brake Master Cylinder to Hydraulic Unit, RHD ABS Mark 70 \(ABS/ASR\)", page 33 .](#)
- 14 Nm

3 - Brake Booster

- Overview. Refer to [2.3.3 Brake Booster/Brake Master Cylinder, RHD", page 145 .](#)
- Removing and installing. Refer to [B4.6 ooster", page 205 .](#)

4 - Brake line

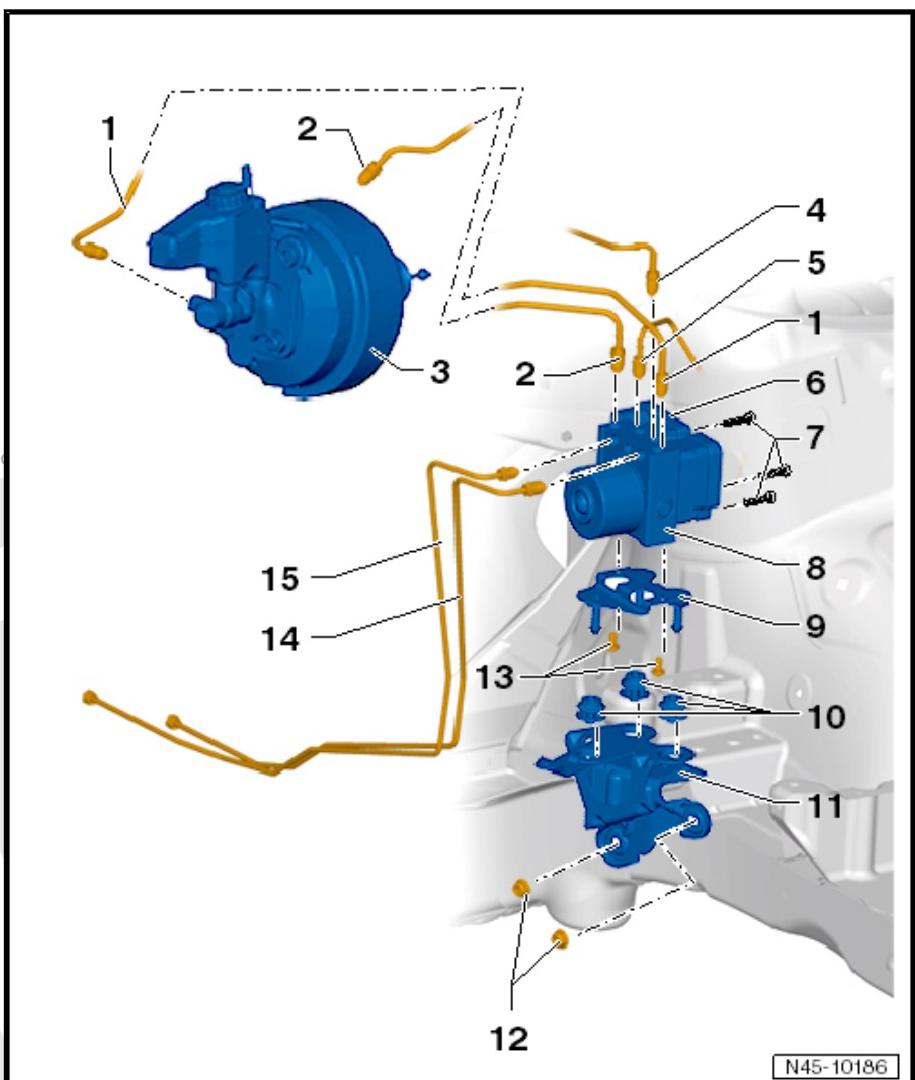
- To the right front brake caliper
- Identification: tube fitting with threads M 10 x 1
- Brake lines, connecting. Refer to [L2.11 lines, Connecting from Tandem Brake Master Cylinder to Hydraulic Unit, RHD ABS Mark 70 \(ABS/ASR\)" , page 33 .](#)
- 14 Nm

5 - Brake line

- To the left front brake caliper
- Identification: tube fitting with threads M 12 x 1
- Brake lines, connecting. Refer to [L2.11 lines, Connecting from Tandem Brake Master Cylinder to Hydraulic Unit, RHD ABS Mark 70 \(ABS/ASR\)" , page 33 .](#)
- 14 Nm

6 - ABS Control Module -J104-

- Removing and installing. Refer to [A3.11 BS Control Module J104 and ABS Hydraulic UnitN55, Removing and Installing, RHD with ABS Mark 70 ABS/ASR", page 65 .](#)
- Disconnecting from the ABS Hydraulic Unit -N55-. Refer to [M3.2 odule, Separating from Hydraulic Unit", page 47 .](#)





- Attaching to the ABS Hydraulic Unit -N55-. Refer to [⇒ M3.3 odule, Attaching to Hydraulic Unit", page 48 .](#)

7 - TORX® socket bolt

- Use new bolts.
- 5.5 Nm

8 - ABS Hydraulic Unit -N55-

- Removing and installing. Refer to [⇒ A3.11 BS Control Module J104 and ABS Hydraulic UnitN55, Removing and Installing, RHD with ABS Mark 70 ABS/ASR", page 65 .](#)
- Disconnecting the ABS Control Module -J104- from the ABS Hydraulic Unit -N55-. Refer to [⇒ M3.2 odule, Separating from Hydraulic Unit", page 47 .](#)
- Install the ABS Control Module -J104- on the ABS Hydraulic Unit -N55-. Refer to [⇒ M3.3 odule, Attaching to Hydraulic Unit", page 48 .](#)

9 - Bracket

10 - Rubber buffer

- When installing the mount, make sure the rubber insulation does not push out of the bracket.

11 - Bracket

- Spray the rubber buffers -item 10- [⇒ Item 10 \(page 38\)](#) with Silicone Lubricant -D 007 000 A2- before installing.
- after installing, make sure it fits properly

12 - Hex nut

- 20 Nm

13 - Hex bolt

- 8 Nm

14 - Brake line

- To the left rear brake caliper
- Identification: tube fitting with threads M 12 x 1
- Brake lines, connecting. Refer to [⇒ L2.11 ines, Connecting from Tandem Brake Master Cylinder to Hydraulic Unit, RHD ABS Mark 70 \(ABS/ASR\)", page 33 .](#)
- 14 Nm

15 - Brake line

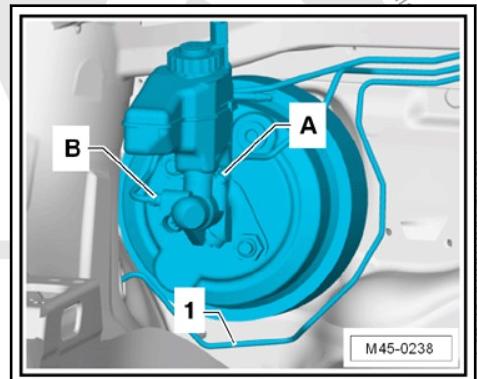
- To the right rear brake caliper
- Identification: tube fitting with threads M 10 x 1
- Brake lines, connecting. Refer to [⇒ L2.11 ines, Connecting from Tandem Brake Master Cylinder to Hydraulic Unit, RHD ABS Mark 70 \(ABS/ASR\)", page 33 .](#)
- 14 Nm

2.14 Brake Lines, Connecting from Tan- dem Brake Master Cylinder to Hy-



Hydraulic Unit, RHD ABS Mark 60 EC (ABS/EDL/ASR/ESP)

On tandem master brake cylinder:



A - Master brake cylinder primary piston circuit to hydraulic unit

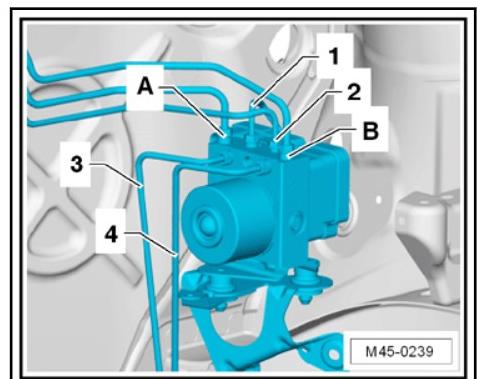
- Identification: 6.5 mm diameter and tube fitting with a M12 x 1 thread

B - Master brake cylinder secondary piston circuit to hydraulic unit

- Identification: 6.5 mm diameter and tube fitting with a M12 x 1 thread

1 - Hydraulic unit to right front brake caliper

On hydraulic unit:



A - Hydraulic unit to master brake cylinder primary piston circuit

- Identification: 6.5 mm diameter and tube fitting with a M12 x 1 thread

B - Hydraulic unit to master brake cylinder secondary piston circuit

- Identification: 6.5 mm diameter and tube fitting with a M12 x 1 thread

1 - Hydraulic unit to left front brake caliper

- Identification: 5.25 mm diameter and tube fitting with a M10 x 1 thread

2 - Hydraulic unit to right front brake caliper

- Identification: 5.25 mm diameter and tube fitting with a M12 x 1 thread

3 - Hydraulic unit to right rear brake caliper



- Identification: 5.25 mm diameter and tube fitting with a M10 x 1 thread

4 - Hydraulic unit to left rear brake caliper

- Identification: 5.25 mm diameter and tube fitting with a M12 x 1 thread





3 Removal and Installation

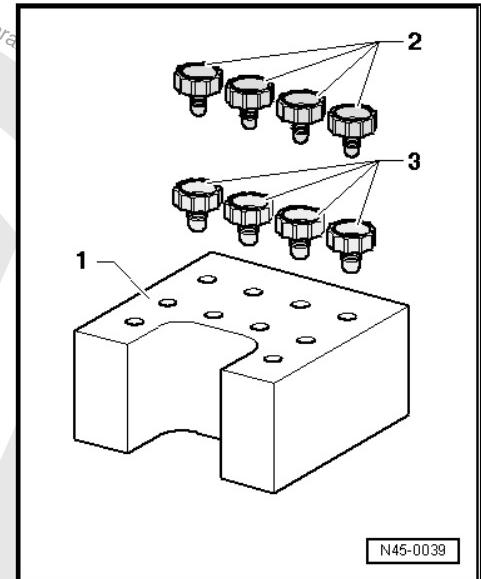
- ⇒ [A3.1 BS Control Module J104 and ABS Hydraulic Unit N55, with ABS Mark 70 ABS/ASR", page 41](#)
- ⇒ [M3.2 odule, Separating from Hydraulic Unit", page 47](#)
- ⇒ [M3.3 odule, Attaching to Hydraulic Unit", page 48](#)
- ⇒ [A3.4 BS Control Module J104 and ABS Hydraulic Unit N55, with ABS Mark 60", page 49](#)
- ⇒ [M3.6 odule, Separating from Hydraulic Unit", page 61](#)
- ⇒ [C3.7 ontrol Module, Installing", page 62](#)
- ⇒ [F3.8 ront ABS Wheel Speed Sensor G45/G47 ", page 63](#)
- ⇒ [R3.9 ear ABS Wheel Speed Sensor G44/G46 ", page 64](#)
- ⇒ [S3.10 ystem Components", page 65](#)

3.1 ABS Control Module -J104- and ABS Hydraulic Unit -N55-, with ABS Mark 70 ABS/ASR

Special tools and workshop equipment required

- ◆ Torque Wrench 1331 5-50Nm -VAG1331-
- ◆ Torque Wrench 1410 -VAG1410-
- ◆ Brake Pedal Actuator -VAG1869/2-.

Plugs -1H0 698 311 A-



After separating the control module from the hydraulic unit, the transport protection for valve body must be placed on the hydraulic unit.

Warranties will not be granted for hydraulic units without transport protection.

1 - Transport protection for valve body (foam)

2 - Sealing plugs M10

3 - Sealing plugs M12



Removing

Installed location:

The control module is bolted to the hydraulic unit and is located at right in the engine compartment.



WARNING

Do not bend the brake lines near the hydraulic unit.

- Read and note the present control module coding.
- Disconnect the battery. Refer to ⇒ Electrical Equipment; Rep. Gr. 27.
- Remove the engine cover. Refer to ⇒ Rep. Gr. 10; Engine Cover; Engine Cover, Removing and Installing.

Additional Work on the Following Engines:

1.4L 59 kW TSI Engine:

- Remove the hose from the check valve.
- Remove the air filter housing upward from the mounting pins and move it to the side. Refer to ⇒ Engine Mechanical, Fuel Injection and Ignition; Rep. Gr. 24.

1.6L 75 kW Engine:

- Remove the intake manifold upper section. Refer to ⇒ Engine Mechanical, Fuel Injection and Ignition; Rep. Gr. 24; Fuel Injection System.

1.4L 118 kW TSI Engine:

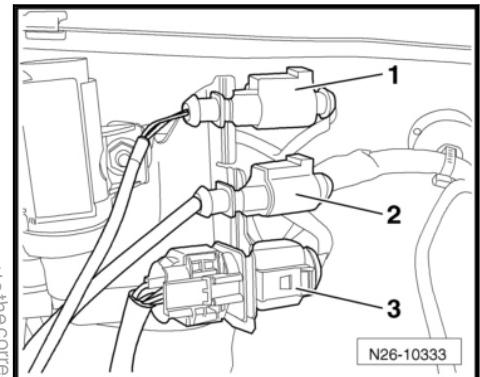
- Clamp off the hose from the coolant reservoir and remove it.
- Remove the pressure pipe and intake tube with the control valve control unit. Refer to ⇒ Engine Mechanical, Fuel Injection and Ignition; Rep. Gr. 24; Fuel Injection System; Part I - Overview - Intake Manifold.
- Remove the charge air hose, then remove the charge air pipe and move it to the side. Refer to ⇒ Engine Mechanical, Fuel Injection and Ignition; Rep. Gr. 21; Charge Air System.

Diesel Engines Without Particulate Filter:

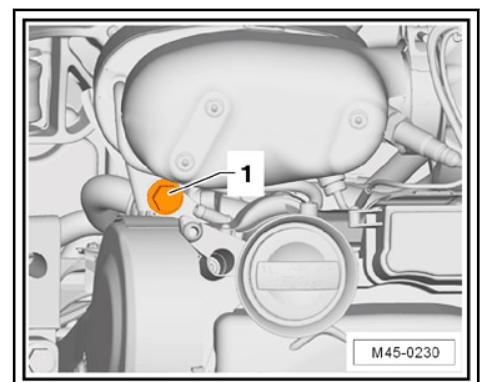
- Remove the plenum chamber cover. Refer to ⇒ Body Exterior; Rep. Gr. 50.
- Remove the plenum chamber bulkhead. Refer to ⇒ Body Exterior; Rep. Gr. 50.

Diesel Engines With Particulate Filter:

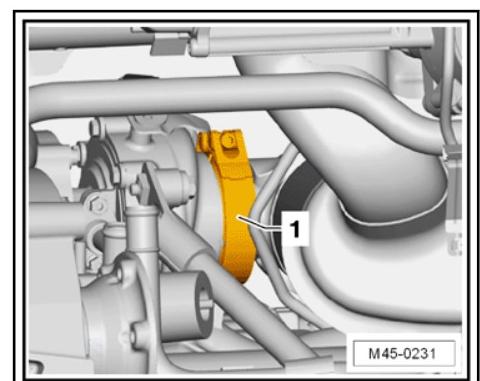
- Remove the plenum chamber cover. Refer to ⇒ Body Exterior; Rep. Gr. 50.
- Remove the plenum chamber bulkhead. Refer to ⇒ Body Exterior; Rep. Gr. 50.
- Disconnect the connector for the Exhaust Gas Temperature Sensor 4 -G648- -2- and Heated Oxygen Sensor -G39- -3-.



- Unclip the cable for the Exhaust Gas Temperature Sensor 4 -G648- and Heated Oxygen Sensor -G39- from all brackets on the plenum chamber and engine.
- Disconnect the connector from the Exhaust Pressure Sensor 1 -G450-.
- Remove the engine cover. Refer to ⇒ Rep. Gr. 10.
- Remove the particulate filter mount bolts -1-.



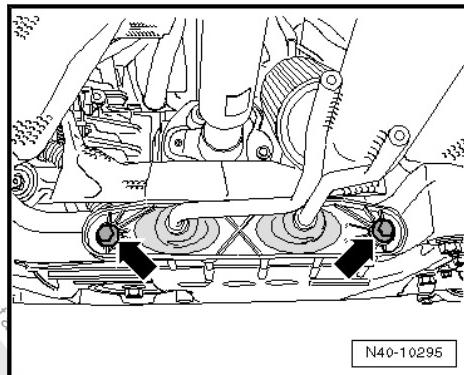
- Raise the vehicle.
- Loosen the clamp -1- for the turbocharger/particulate filter connection and remove it.



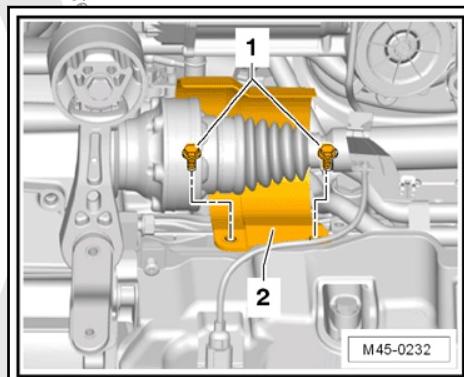
Note

The illustration shows the clamp screw -1- from underneath. In some cases, this can be installed from the top.

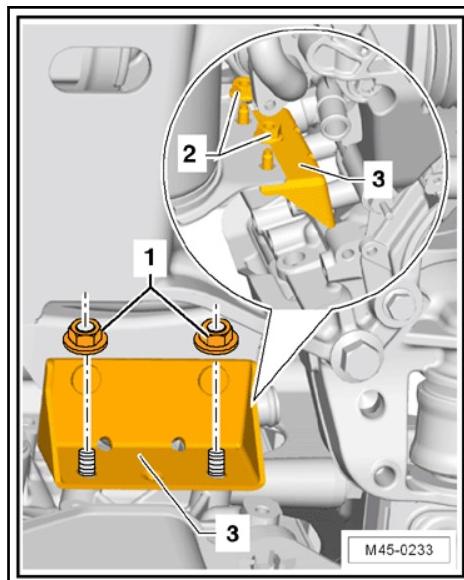
- Remove the exhaust system bracket from the subframe -arrows-.



- Remove the bolts -1- and remove the drive shaft cover-2-.



- Disconnect the right driveshaft from the flange, lay it down and secure it.
- Loosen the double clamp on the exhaust pipe and push it toward the rear.
- Remove the nuts -1- and lower the particulate filter.



- Remove the nuts -2- and remove the particulate filter bracket -3-.
- Lower the particulate filter just enough so that it touches the steering gear.

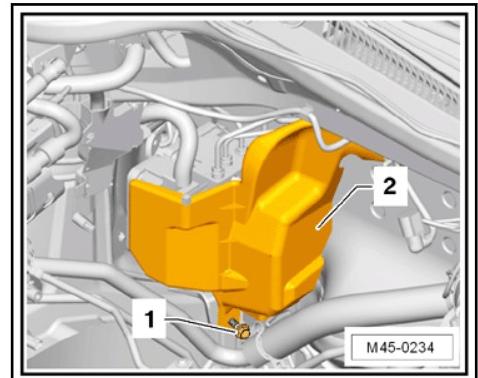


When lowering, always pay close attention to the cable, the Exhaust Gas Temperature Sensor 4 -G648- and the Heated Oxygen Sensor -G39- to prevent damage.

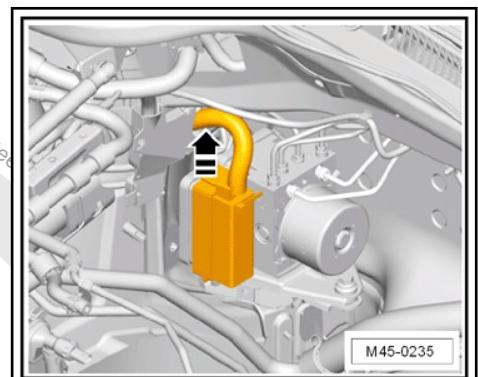
- Lower vehicle.

Continuation for all vehicles:

- Remove the nuts -1- and remove the heat shield -2-, if equipped.



- Release and remove connector from control module in direction of -arrow-.



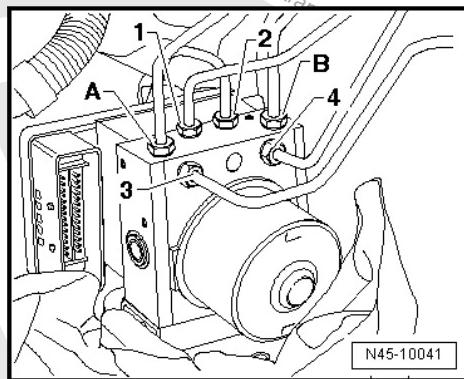
- Install the Brake Pedal Actuator -VAG1869/2-.
- Attach the bleeder hose on the bleeder bottles to the left front and left rear brake caliper bleeder valves and open the valves.
- Push the brake pedal with the Brake Pedal Actuator - VAG1869/2- at least 60 mm.
- Close left front and left rear bleeder valves.

Do not remove the Brake Pedal Actuator -VAG1869/2-.

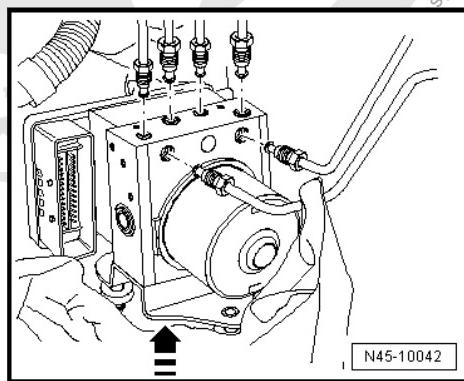
- Place sufficient lint-free cloths under the control module and hydraulic unit.

Make Sure No Brake Fluid Gets Onto Contacts.

- First mark both brake lines of the brake master cylinder -A- and -B- and remove them from the hydraulic unit.



- Immediately seal the brake lines and threaded holes using Plugs -1H0 698 311 A-.
- Mark brake lines (brake calipers) -1- to -4-, unscrew and seal.
- Pull the hydraulic unit with control module upward out of the shock absorbers in direction of -arrows-.



Installing

Install in reverse order of removal. Note the following:



Note

- ◆ *Do not remove sealing plugs at new hydraulic unit until the corresponding brake line is about to be installed.*
- ◆ *If the sealing plugs are removed too early, brake fluid can escape and unit may not be sufficiently filled or adequately bled.*
- ◆ *When installing, make sure the damper rubber is not pushed out of the console.*

- Remove the Brake Pedal Actuator -VAG1869/2-.
- Bleed the brake system. Refer to ⇒ [S1.3 system, Bleeding](#), [page 132](#).
- Connect the battery. Refer to ⇒ Electrical Equipment; Rep. Gr. 27; Battery, Disconnecting and Connecting.
- Code the ABS Control Module -J104- see Vehicle Diagnostic Tester "Guided Fault Finding" function

Tightening Specification

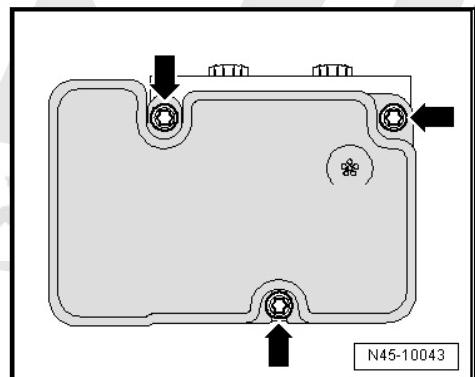
Component	Tightening Specification
Bolt for ABS Hydraulic Unit -N55- to bracket	8 Nm



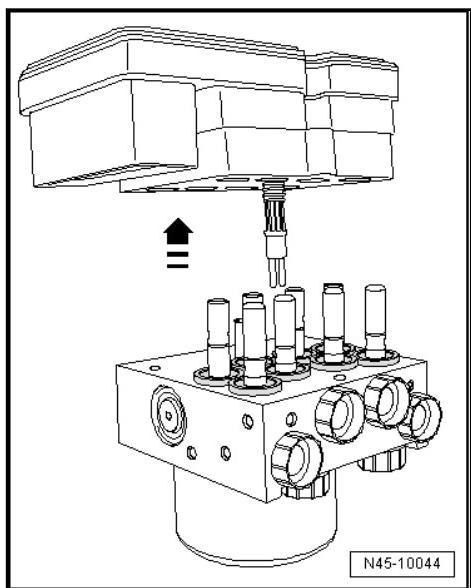
Component	Tightening Specification
Hex fitting bolt, retainer to bracket	8 Nm
Brake lines to ABS Hydraulic Unit -N55- Thread M 10 x 1 Thread M 12 x 1	14 Nm 14 Nm
Air Filter	Refer to ⇒ Rep. Gr. 23; Air Filter; Overview - Air Filter Housing.
Driveshaft	Refer to ⇒ Suspension, Wheels and Steering; Rep. Gr. 40; Driveshaft; Driveshaft, Removing and Installing
Exhaust System	Refer to ⇒ Rep. Gr. 26; Exhaust Pipes/Mufflers; Overview - Muffler.
Emissions Control	Refer to ⇒ Rep. Gr. 26; Overview - Emissions Control.

3.2 Control Module, Separating from Hydraulic Unit

- Set the hydraulic unit with the control module upward on a clean, level surface.
- Remove the TORX® socket bolts –arrows-.



- Remove the control module from hydraulic unit in direction of –arrow- without tilting.



- Carefully remove all seals from the valve bodies of the hydraulic unit.



WARNING

- ◆ *The circuit board is laid open on a disconnected control module.*
- ◆ *Moisture or dirt particles must not get into the interior of the control module.*
- ◆ *The hydraulic pump must not be separated from the hydraulic unit.*
- ◆ *Avoid build-up of static electricity!*

- Cover control module magnetic coils with a lint free cloth.

After separating the control module and hydraulic unit, use transport protection for valve body.

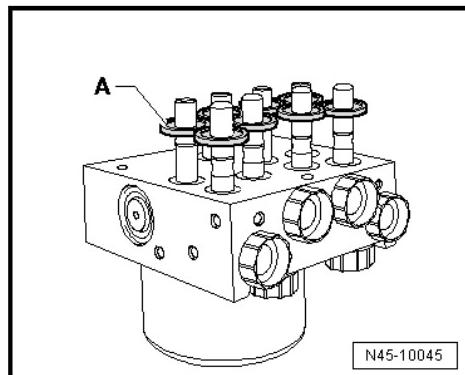
3.3 Control Module, Attaching to Hydraulic Unit



WARNING

Strong vibrations (for example falls, impacts) can destroy the control module. Control module must then no longer be used.

- Surface must be cleaned before assembling.
- Slide all sealing rings -A- slightly over the valve dome.



- Place the control module on the hydraulic unit without tilting.

Sealing rings are then brought into their end position.

- Bolt the hydraulic unit and control module with the new TORX® socket bolts supplied.



Note

- ◆ *A new control module may be installed a maximum of two times on a used hydraulic unit, to ensure that the elastic seal seals sufficiently.*
- ◆ *Do not install a used control module.*

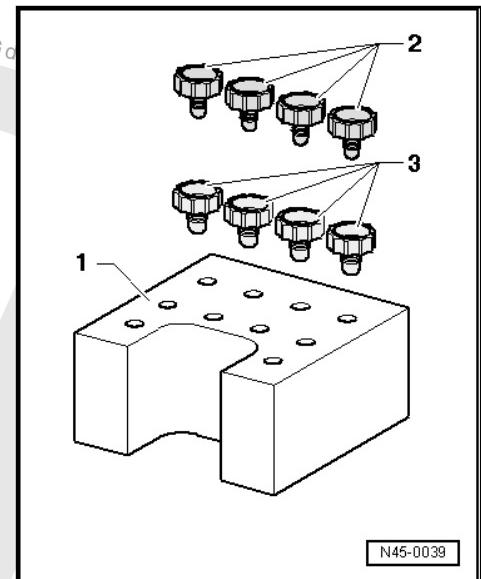


3.4 ABS Control Module -J104- and ABS Hydraulic Unit -N55-, with ABS Mark 60

Special tools and workshop equipment required

- ◆ Torque Wrench 1331 5-50Nm -VAG1331-
- ◆ Torque Wrench 1410 -VAG1410-
- ◆ Brake Pedal Actuator -VAG1869/2-.

Plugs -1H0 698 311 A-



N45-0039

After separating the control module from the hydraulic unit, the transport protection for valve body must be placed on the hydraulic unit.

Warranties will not be granted for hydraulic units without transport protection.

1 - Transport protection for valve body (foam)

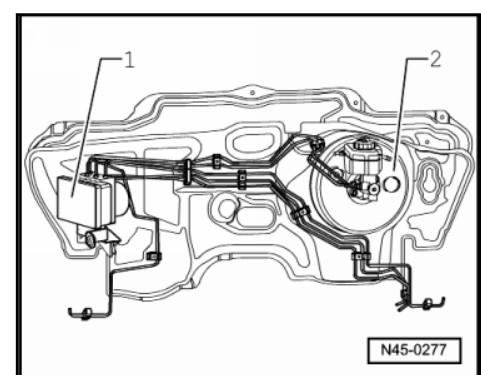
2 - M10 plug

3 - M12 plug

Removing

Installed location:

The control module is bolted to the hydraulic unit and is located at right in the engine compartment -1-.



N45-0277



WARNING

Do not bend the brake lines near the hydraulic unit.

- Read and note the present control module coding.
- Disconnect the battery. Refer to ⇒ Electrical Equipment; Rep. Gr. 27.
- Remove the engine cover. Refer to ⇒ Rep. Gr. 10; Engine Cover; Engine Cover, Removing and Installing.

Additional Work on the Following Engines:

1.4L 59 kW Engine:

- Remove the hose from the check valve.
- Remove the air filter housing upward from the mounting pins and move it to the side. Refer to ⇒ Engine Mechanical, Fuel Injection and Ignition; Rep. Gr. 24.

1.6L 75 kW Engine:

- Remove the intake manifold upper section. Refer to ⇒ Engine Mechanical, Fuel Injection and Ignition; Rep. Gr. 24; Fuel Injection System.

1.4L 118 kW TSI Engine:

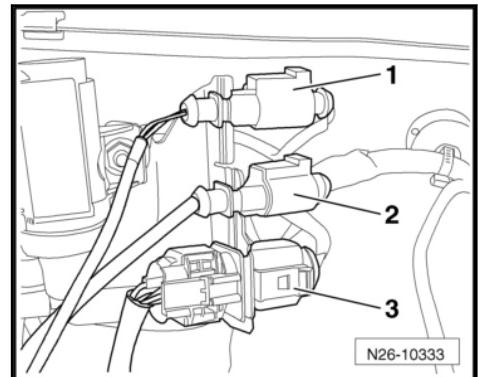
- Clamp off the hose from the coolant reservoir and remove it.
- Remove the pressure pipe and intake tube with the control valve control unit. Refer to ⇒ Engine Mechanical, Fuel Injection and Ignition; Rep. Gr. 24; Fuel Injection System; Part I - Overview - Intake Manifold.
- Remove the charge air hose, then remove the charge air pipe and move it to the side. Refer to ⇒ Engine Mechanical, Fuel Injection and Ignition; Rep. Gr. 21; Charge Air System.

Diesel Engines Without Particulate Filter:

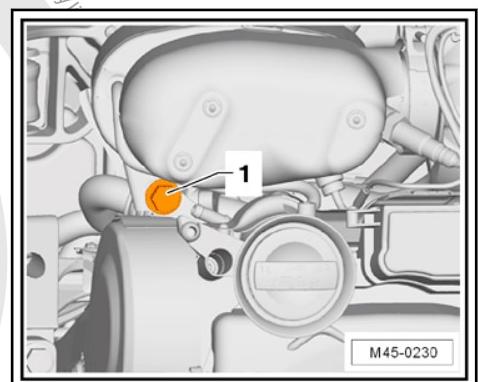
- Remove the plenum chamber cover. Refer to ⇒ Body Exterior; Rep. Gr. 50.
- Remove the plenum chamber bulkhead. Refer to ⇒ Body Exterior; Rep. Gr. 50.

Diesel engines With Particulate Filter:

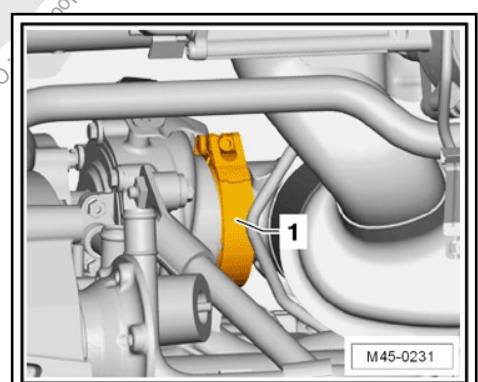
- Remove the plenum chamber cover. Refer to ⇒ Body Exterior; Rep. Gr. 50.
- Remove the plenum chamber bulkhead. Refer to ⇒ Body Exterior; Rep. Gr. 50.
- Disconnect the connector for the Exhaust Gas Temperature Sensor 4 -G648- -2- and Heated Oxygen Sensor -G39- -3-.



- Unclip the cable for the Exhaust Gas Temperature Sensor 4 -G648- and Heated Oxygen Sensor -G39- from all brackets on the plenum chamber and engine.
- Disconnect the connector from the Exhaust Pressure Sensor 1 -G450-.
- Remove the engine cover. Refer to ⇒ Rep. Gr. 10.
- Remove the particulate filter mount bolts -1-.



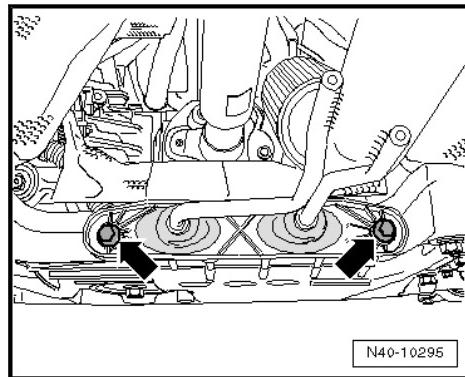
- Raise the vehicle.
- Loosen the clamp -1- for the turbocharger/particulate filter connection and remove it.



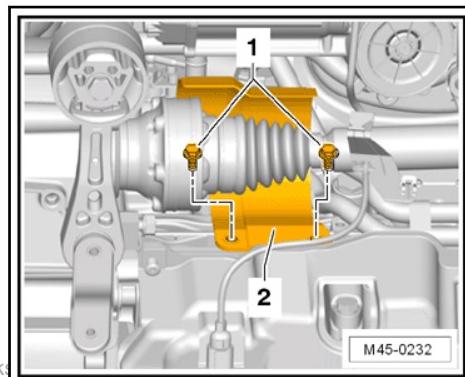
Note

The illustration shows the clamp screw -1- from underneath. In some cases, this can be installed from the top.

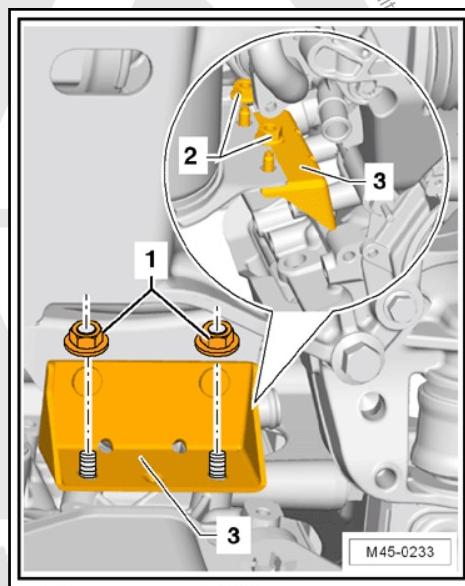
- Remove the exhaust system bracket from the subframe -arrows-.



- Remove the bolts -1- and remove the drive shaft cover -2-.



- Disconnect the right driveshaft from the flange, lay it down and secure it.
- Loosen the double clamp on the exhaust pipe and push it toward the rear.
- Remove the nuts -1- and lower the particulate filter.



- Remove the nuts -2- and remove the particulate filter bracket -3-.
- Lower the particulate filter just enough so that it touches the steering gear.



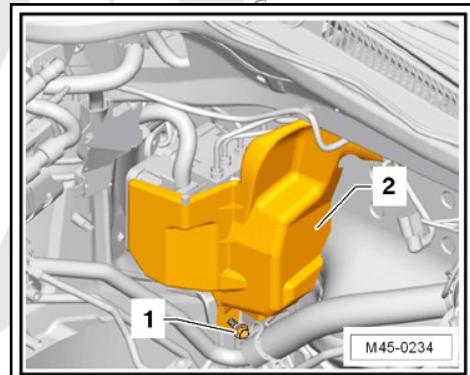
Note

When lowering, always pay close attention to the cable, the Exhaust Gas Temperature Sensor 4 -G648- and the Heated Oxygen Sensor -G39- to prevent damage.

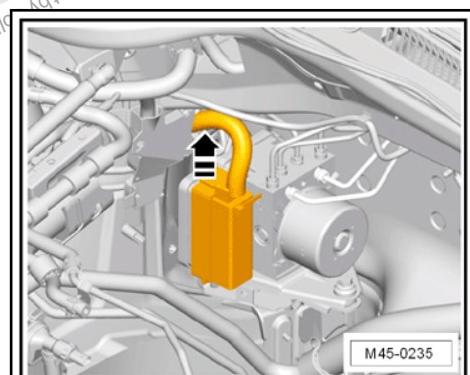
- Lower vehicle.

Continuation For All Vehicles

- Remove the nuts -1- and remove the heat shield -2-, if equipped.



- Release and remove connector from control module in direction of -arrow-.



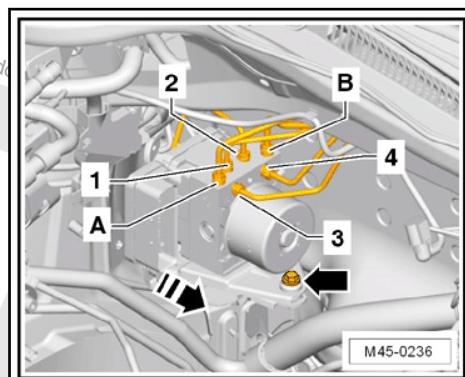
- Install the Brake Pedal Actuator -VAG1869/2-.
- Attach the bleeder hose on the bleeder bottles to the left front and left rear brake caliper bleeder valves and open the valves.
- Push the brake pedal with the Brake Pedal Actuator - VAG1869/2- at least 60 mm.
- Close left front and left rear bleeder valves.
- Do not remove the Brake Pedal Actuator -VAG1869/2-.
- Place sufficient lint-free cloths under the control module and hydraulic unit.

Make Sure No Brake Fluid Gets Onto Contacts.

- First, mark both brake lines from master cylinder -A and B- and remove from the hydraulic unit.
- Close the brake lines and threaded holes immediately using Plugs -1H0 698 311 A-.



- Mark brake lines (brake calipers) -1- through -4- and then remove them.
- Close the brake lines and threaded holes immediately using Plugs -1H0 698 311 A-.
- Remove the hex bolt form the bracket -arrow-.
- Remove the hydraulic unit, the control module and the side retainer in direction of -arrow- from the bracket rubber insulation and turn it on its head.
- Remove the retainer from the hydraulic unit in the engine compartment.
- Remove the hydraulic unit and the control module.



Installing



Note

- ◆ Do not remove sealing plugs at new hydraulic unit until the corresponding brake line is about to be installed.
 - ◆ If the sealing plugs are removed too early, brake fluid can escape and unit may not be sufficiently filled or adequately bled.
- Install in reverse order of removal.



WARNING

When installing the bracket, make sure the rubber buffers are not pushed out of the bracket. Check if the ABS hydraulic unit with the control module is secure after installing, otherwise malfunctions may occur.

- Remove the Brake Pedal Actuator -VAG1869/2-.
- Bleed the brake system. Refer to [S1.3 ystem, Bleeding](#), [page 132](#).
- Code the ABS Control Module -J104- see Vehicle Diagnostic Tester "Guided Fault Finding" function.

A basic setting for the Steering Angle Sensor -G85-, Transverse Acceleration Sensor -G200- and Brake Pressure Sensor 1 -G201- must be done.



Tightening Specifications

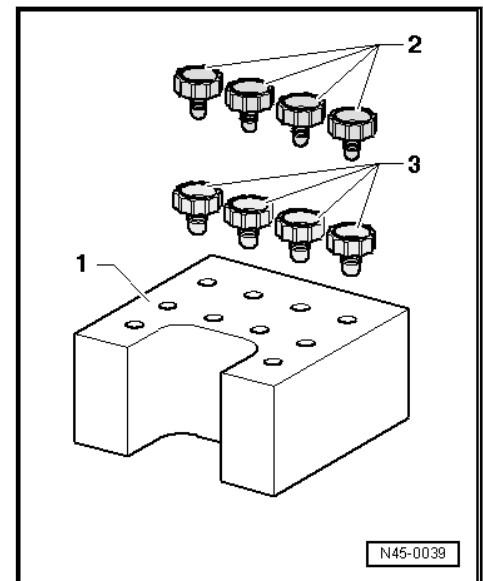
Component	Tightening Specification
Control module to hydraulic unit ◆ Use new bolts.	2 Nm + 0.8 Nm
Hydraulic unit hex bolt to bracket	8 Nm
Hex fitting bolt, retainer to bracket	8 Nm
Brake lines to the ABS unit: Thread M10 x 1 Thread M12 x 1	14 Nm 14 Nm

3.5 ABS Control Module -J104- and ABS Hydraulic Unit -N55-, with ABS Mark 60

Special tools and workshop equipment required

- ◆ Torque Wrench 1331 5-50Nm -VAG1331-
- ◆ Torque Wrench 1410 -VAG1410-
- ◆ Brake Pedal Actuator -VAG1869/2-.
- ◆ Hose Clip Pliers -VAS6340-
- ◆ Bleeder Bottle
- ◆ Brake Bleeding Tool Set -VAS6564-

Plugs -1H0 698 311 A-



Install the transportation protection after removing the ABS Hydraulic Unit -N55-.

The warranty on the ABS Hydraulic Unit -N55- will not be honored if there is no transportation protection.

1 - Transport protection for valve body (foam)

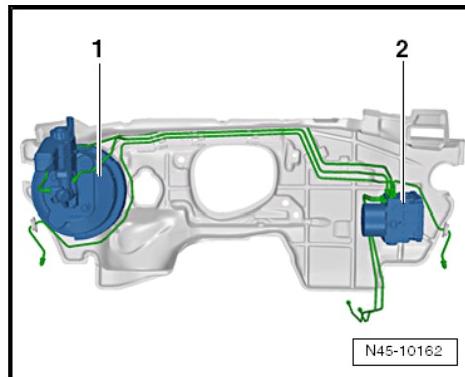
2 - Sealing plugs M10

3 - Sealing plugs M12



Removing

Installation location:



- 1 - brake booster with tandem master cylinder
- 2 - ABS Hydraulic Unit -N55- with ABS Control Module -J104-



Caution

Do not confuse the brake lines when connecting them to the tandem brake master cylinder and the ABS Hydraulic Unit -N55-. Mark the installed position before removing the lines.

Do not bend the brake lines near the ABS Hydraulic Unit -N55-!

- Get the coding from the ABS Control Module -J104- and write it down.

Use the Vehicle Diagnostic Tester.

- ◆ Chassis
- ◆ Brake System
- ◆ Anti-lock braking system ABS/EDL/ASR/ESP Mark 60 EC
- ◆ Function
- ◆ Check coding in the ABS control module J104



Note

Disconnect battery ground strap for all further work. See if a coded radio is installed. Get the anti-theft code beforehand, if necessary.



Caution

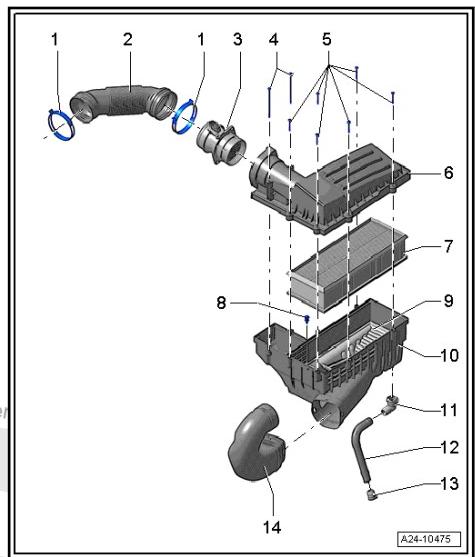
Disconnecting the battery can result in damage to electronic components.

- ◆ Complete the steps for disconnecting the battery.

- Remove the engine cover. Refer to ⇒ Rep. Gr. 10; Engine Cover; Engine Cover, Removing and Installing.
- Remove the battery. Refer to ⇒ Electrical Equipment; Rep. Gr. 27; Battery, Removing and Installing.



Vehicles With a Gasoline Engine

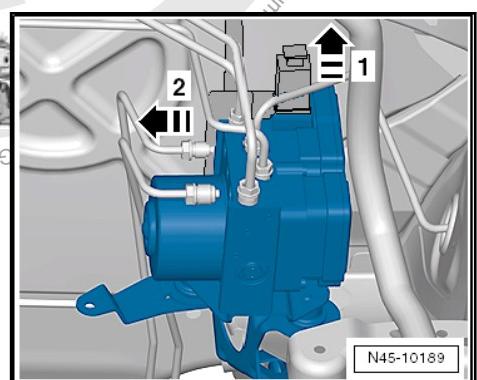


- Remove the air filter. Refer to ⇒ Rep. Gr. 24; Air Filter; Overview - Air Filter Housing.
- If necessary, remove the intake hose -2-. Refer to ⇒ Rep. Gr. 24; Air Filter; Overview - Air Filter Housing.
- To do this, loosen clamps -1-.
- Seal the openings with the Engine Bung Set -VAS6122-.

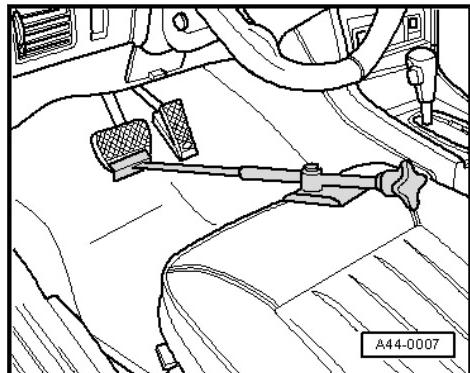
Vehicles with a Diesel Engine

- Remove the air filter. Refer to ⇒ Rep. Gr. 23; Air Filter; Overview - Air Filter Housing.
- If necessary, remove the intake hose -2-. Refer to ⇒ Rep. Gr. 23; Air Filter; Overview - Air Filter Housing.
- To do this, loosen clamps -1-.
- Seal the openings with the Engine Bung Set -VAS6122-.

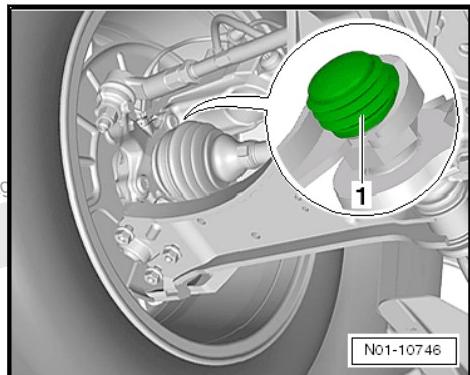
Continuation for All Vehicles



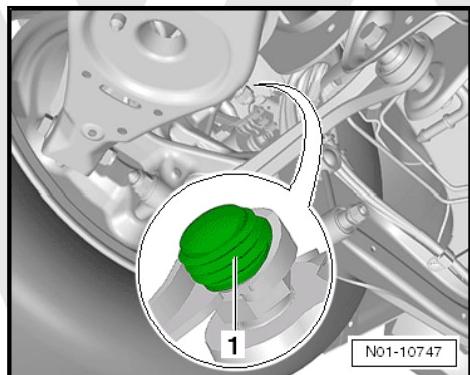
- Remove the battery tray. Refer to ⇒ Electrical Equipment; Rep. Gr. 27; Battery; Battery Tray, Removing and Installing.
- Release the connector from the control module in the direction of -arrow 1-.
- Remove the connector from the control module in the direction of -arrow 2-.
- Install the Brake Pedal Actuator -VAG1869/2-.



- Remove front left caps -1-.

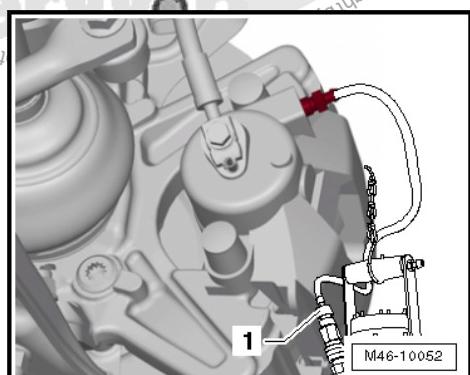


- Remove rear left caps -1-.



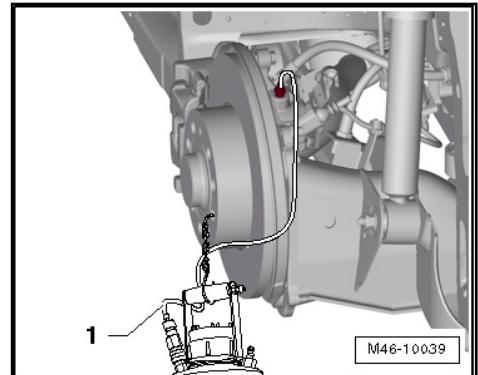
Use Suitable Bleeder Hose. It Must Fit Tightly on Bleeder Valve so That No Air Gets Into Brake System.

- Attach the bleeder bottle bleed hose -1- to the left front brake caliper bleed valve.





- Open the bleed valve.
- Attach the bleeder bottle bleed hose -1- to the left rear brake caliper bleed valve.

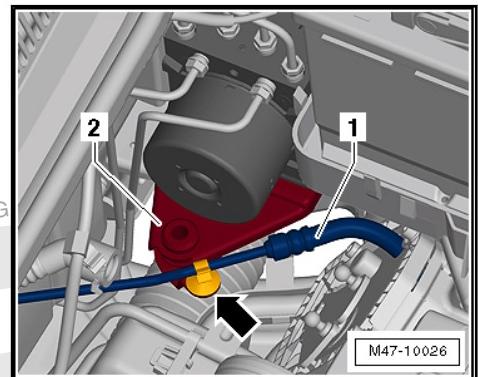


M46-10039

- Open the bleed valve.
- Push the brake pedal with the Brake Pedal Actuator - VAG1869/2- at least 60 mm.
- Close left front and left rear bleeder valves.

Do not remove the Brake Pedal Actuator -VAG1869/2-.

- If equipped, unclip hydraulic line -1- at the bracket -2- -arrows-.



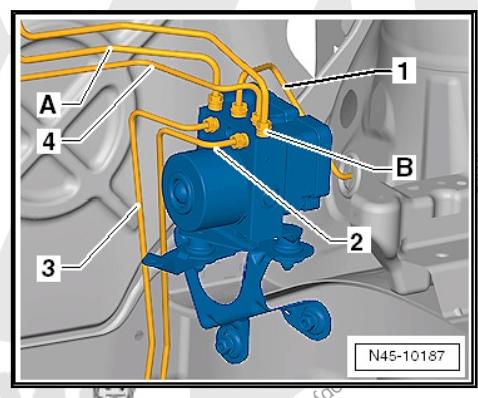
M47-10026

Continuation for All Vehicles:

- Place a lint-free cloth under the ABS Control Module -J104- and the ABS Hydraulic Unit -N55-.

Make Sure No Brake Fluid Gets Onto Contacts.

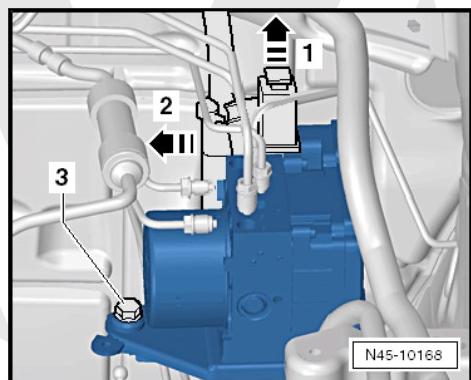
- Mark brake lines -A- and -B- from brake master cylinder.



N45-10187



- Remove the brake lines -A- and -B- from the ABS Hydraulic Unit -N55-.
- Close the brake lines and threaded holes immediately using Plugs -1H0 698 311 A-.
- Mark brake lines -1- to -4-, unscrew and seal.
- Disconnect the connector from ABS Control Module -J104- in direction of -arrow 1-.
- Remove connector in direction of -arrow 2-.
- Remove the hex bolt -3- from the bracket.
- Remove the ABS Hydraulic Unit -N55- with the ABS Control Module -J104- and the bracket from the rubber bushings in the console.
- Remove the ABS Hydraulic Unit -N55- with the ABS Control Module -J104-.



Installing

Installation is the reverse of removal, with special attention to the following:



Note

- ◆ Remove the plugs on the new ABS Hydraulic Unit -N55- only when installing the corresponding brake line.
- ◆ Brake fluid will leak out if the plugs are removed too early from the ABS Hydraulic Unit -N55-. The system will then not have sufficient brake fluid and will not adequately bleed.



WARNING

When installing, make sure the rubber buffers are not pushed out of the bracket. Make sure that the ABS Hydraulic Unit -N55- is secure after installing it otherwise malfunctions can occur.

- Connect the battery. Refer to ⇒ Electrical Equipment; Rep. Gr. 27; Battery; Disconnecting and Connecting.
- Remove the Brake Pedal Actuator -VAG1869/2-.
- Bleed the brake system. Refer to [⇒ S1.3 ystem, Bleeding](#), [page 132](#).

If a new ABS Control Module -J104- was installed, it must be coded.



Use the Vehicle Diagnostic Tester.

- ◆ Chassis
- ◆ Brake System
- ◆ Anti-lock braking system ABS/EDL/ASR/ESP Mark 60
EC
- ◆ Function
- ◆ Sensor basic setting (G85/ G200/ G201/ G251)

If a new ABS Control Module -J104- was installed, it must be coded.

Use the Vehicle Diagnostic Tester.

- ◆ Chassis
- ◆ Brake System
- ◆ Anti-lock braking system ABS/EDL/ASR/ESP Mark 60
EC
- ◆ Function
- ◆ ABS Control Module J104, coding

Tightening Specifications

Component	Tightening Specification
Bolt for ABS Hydraulic Unit -N55- to bracket	8 Nm
Brake lines to ABS Hydraulic Unit -N55-	
Thread M10 x 1	14 Nm
Thread M12 x 1	14 Nm
removing and installing	Refer to ⇒ Rep. Gr. 24; Air Filter; Overview - Air Filter Housing.
Diesel engine	Refer to ⇒ Rep. Gr. 23; Air Filter; Overview - Air Filter Housing.
Engine Cover	Refer to ⇒ Rep. Gr. 10; Engine Cover; Engine Cover, Removing and Installing.
Battery	Refer to ⇒ Electrical Equipment; Rep. Gr. 27; Battery, Removing and Installing.
Battery tray	Refer to ⇒ Electrical Equipment; Rep. Gr. 27; Battery, Battery Tray, Removing and Installing.

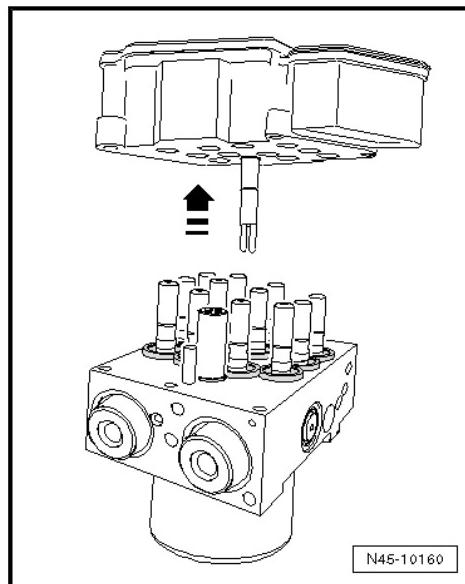
3.6 Control Module, Separating from Hydraulic Unit



Note

Set the hydraulic unit with the control module upward on a clean, level surface.

- Remove the inner TORX® bolt from the control module.
- Pull control module off from hydraulic unit in direction of -arrow- without angling.



- Carefully remove all seals from the valve bodies of the hydraulic unit.



WARNING

- ◆ *The circuit board is laid open on a disconnected control module.*
- ◆ *Moisture or dirt particles must not get into the interior of the control module.*
- ◆ *Avoid build-up of static electricity!*

- Cover control module magnetic coils with a lint free cloth.

After separating the control module and hydraulic unit, use transport protection for valve body.

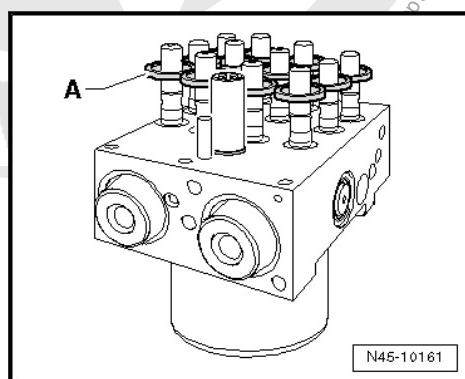
3.7 New Control Module, Installing



WARNING

Strong vibrations (for example falls, impacts) can destroy the control module. Control module must then no longer be used.

- Surface must be cleaned before assembling.
- Slide all sealing rings -A- slightly over the valve dome.





- Place the control module on the hydraulic unit without tilting.

Sealing rings are then brought into their end position.

- Install and tighten the hydraulic unit and control module with the new TORX® socket bolts diagonally and in stages. Refer to [⇒ A3.1 BS Control Module J104 and ABS Hydraulic Unit N55, with ABS Mark 70 ABS/ASR](#), page 41 or [⇒ A3.4 BS Control Module J104 and ABS Hydraulic Unit N55, with ABS Mark 60](#), page 49 .



Note

- ◆ A new control module may be installed a maximum of two times on a used hydraulic unit, to ensure that the elastic seal seals sufficiently.
- ◆ Do not install a used control module.

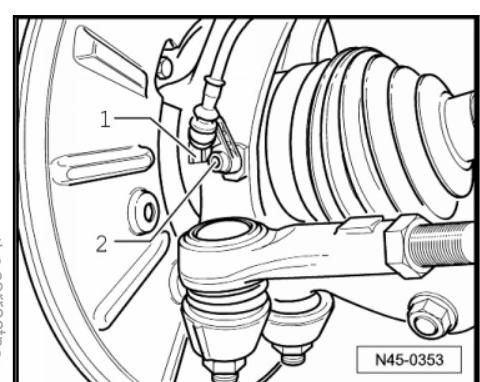
3.8 Right/Left Front ABS Wheel Speed Sensor -G45-/G47-

[⇒ F3.8.1 Right/Left Front ABS Wheel Speed Sensor G45/G47](#), page 63

3.8.1 Right/Left Front ABS Wheel Speed Sensor -G45-/G47-

Removing

- Raise the vehicle.
- Release and remove the connector -1- from the speed sensor wire and the speed sensor.
- Remove the screw -2- from the wheel bearing housing.
- Remove the ABS speed sensor from the wheel bearing housing.



Installing

- Clean the inner surface of the hole before inserting the speed sensor.
- Coat the speed sensor all around with Hot Bolt Paste -G 052 112 A3-.
- Insert the speed sensor into the wheel bearing housing hole.
- Tighten the bolt to 8 Nm.
- Install the speed sensor wire on the speed sensor.



3.9 Right/Left Rear ABS Wheel Speed Sensor -G44/-G46-

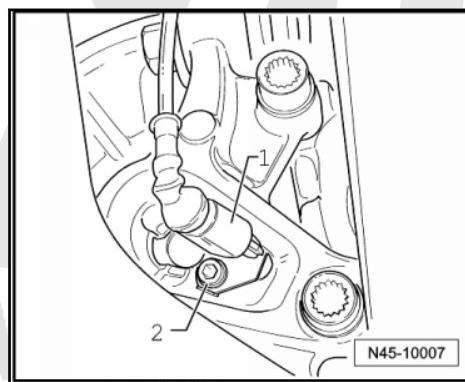
⇒ R3.9.1 rear ABS Wheel Speed Sensor G44/G46, FWD", page 64

⇒ R3.9.2 rear ABS Wheel Speed Sensor G44/G46, AWD", page 64

3.9.1 Right/Left Rear ABS Wheel Speed Sensor -G44/-G46-, FWD

Removing

- Raise the vehicle.
- Release and disconnect the connector -1-.
- Remove the screw -2- from the wheel bearing housing.
- Remove ABS speed sensor from wheel bearing housing.



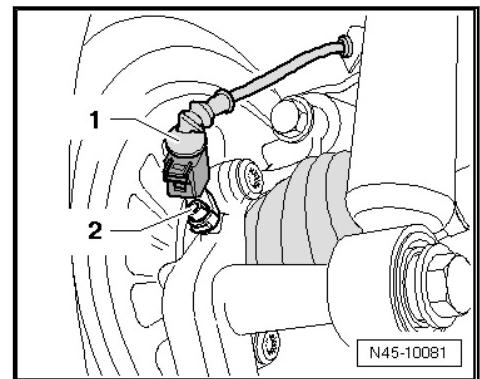
Installing

- Clean the inner surface of the hole before inserting the speed sensor.
- Coat the speed sensor all around with Hot Bolt Paste -G 052 112 A3-.
- Insert the speed sensor into the wheel bearing housing hole.
- Tighten the bolt to 8 Nm.
- Install the speed sensor wire on the speed sensor.

3.9.2 Right/Left Rear ABS Wheel Speed Sensor -G44/-G46-, AWD

Removing

- Raise the vehicle.
- Release and disconnect the connector -1-.
- Remove the screw -2- from the wheel bearing housing.
- Remove ABS speed sensor from wheel bearing housing.



Installing

- Clean the inner surface of the hole before inserting the speed sensor.
- Coat the speed sensor all around with Hot Bolt Paste -G 052 112 A3-.
- Insert the speed sensor into the wheel bearing housing hole.
- Tighten the bolt to 8 Nm.
- Install the speed sensor wire on the speed sensor.

3.10 ESP System Components

For the ABS-Mark 60 EC in this vehicle, the Transverse Acceleration Sensor -G200-, the Rotation Rate Sensor -G202- and the Longitudinal Acceleration Sensor -G251- (depending on the vehicle equipment level) are installed in the control module.

It is not possible to replace them individually.

- ABS Control Module -J104- removing and installing. Refer to [⇒ A3.4 BS Control Module J104 and ABS Hydraulic Unit N55, with ABS Mark 60](#), page 49 .

3.10.1 Steering Angle Sensor -G85-

The Steering Angle Sensor -G85- is installed in the steering gear on vehicles with electro-mechanical power steering.

Steering, removing and installing. Refer to [⇒ Suspension, Wheels, Steering; Rep. Gr. 48; Electro-Mechanical Steering Gear](#).

- Then a basic setting for the Steering Angle Sensor -G85- must be performed.

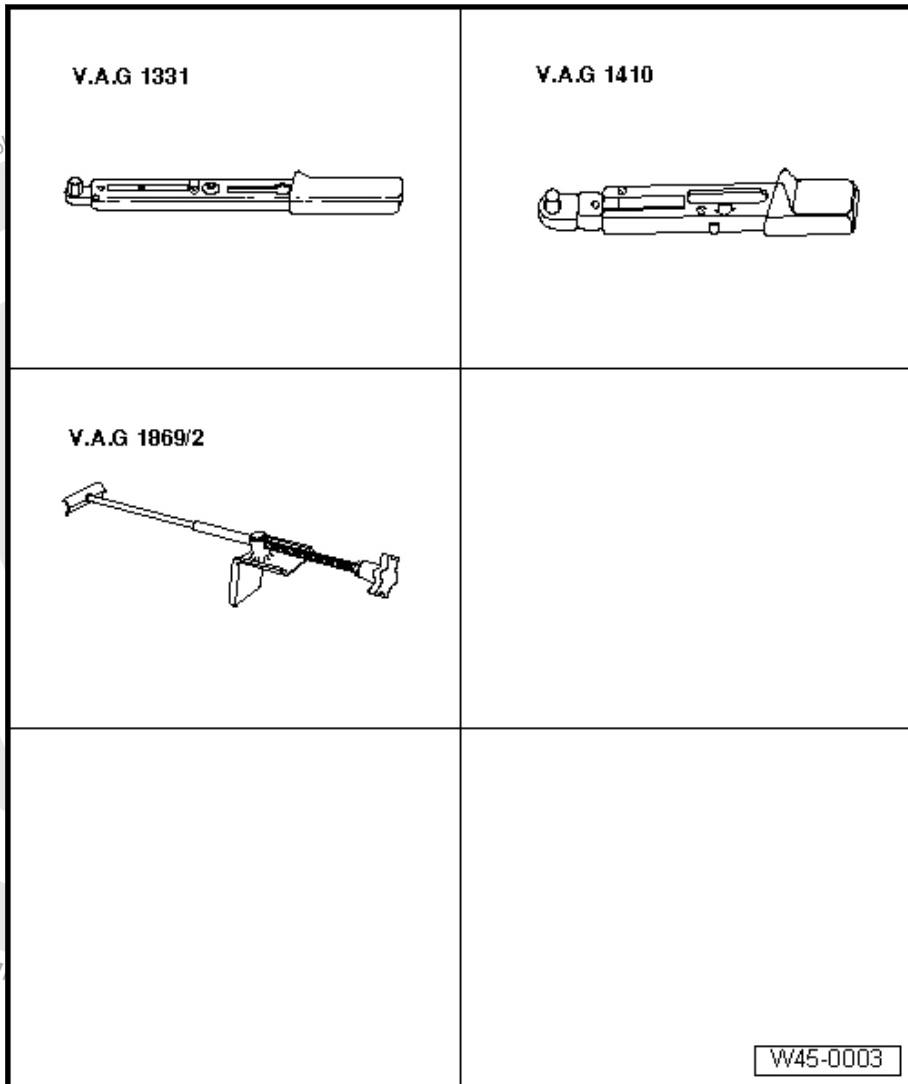
Connect the -Vehicle Diagnostic Tester- and select the function.
Refer to [⇒ D1.3 iagnostic Tester](#), page 11 .

3.11 ABS Control Module -J104- and ABS Hydraulic Unit -N55-, Removing and Installing, RHD with ABS Mark 70 ABS/ASR

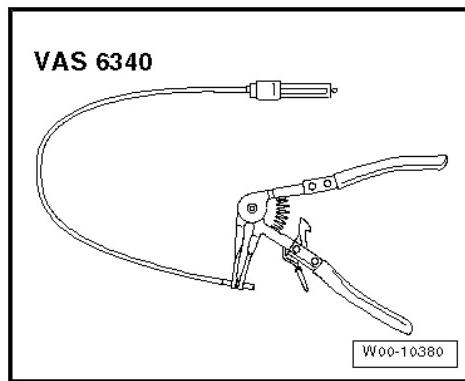


Special tools and workshop equipment required

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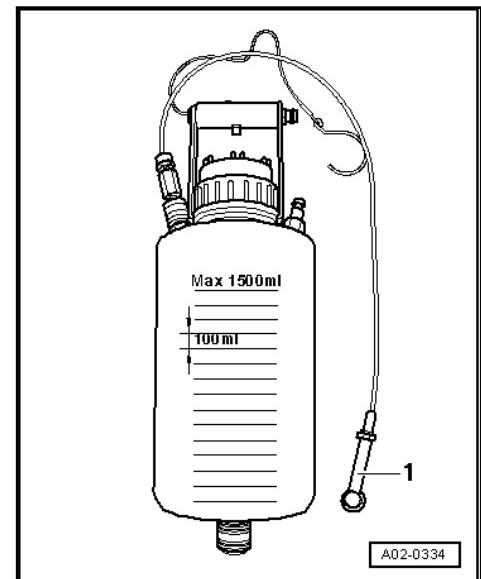


- ◆ Torque Wrench 1331 5-50Nm -VAG1331-
- ◆ Torque Wrench 1410 -VAG1410-
- ◆ Brake Pedal Actuator -VAG1869/2-.
- ◆ Hose Clip Pliers -VAS6340-



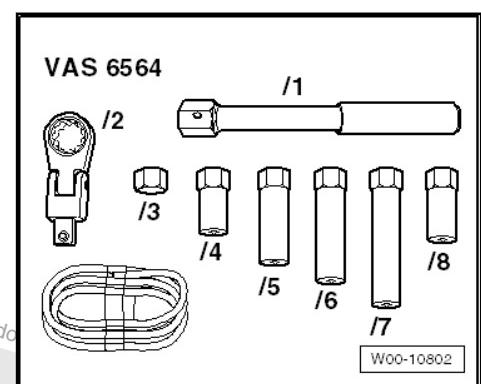


◆ Bleeder Bottle



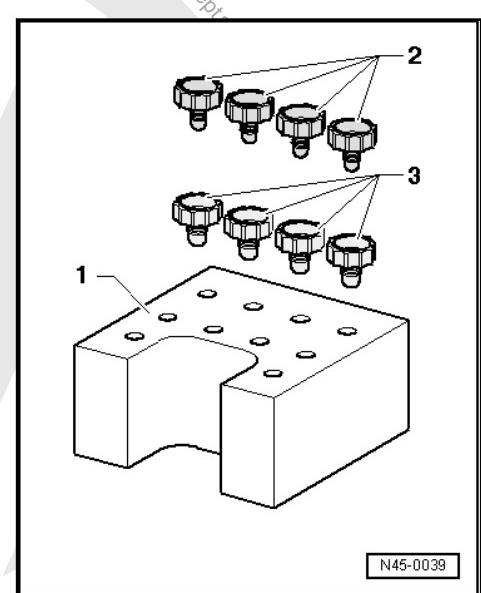
A02-0334

◆ Brake Bleeding Tool Set -VAS6564-



W00-10802

Plugs -1H0 698 311 A-



N45-0039

Install the transportation protection after removing the ABS Hydraulic Unit -N55-.

The warranty on the ABS Hydraulic Unit -N55- will not be honored if there is no transportation protection.

1 - Transport protection for valve body (foam)

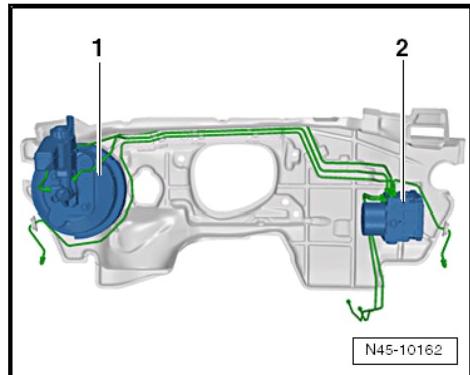


2 - Sealing plugs M10

3 - Sealing plugs M12

Removing

Installation location:



1 - brake booster with tandem master cylinder

2 - ABS Hydraulic Unit -N55- with ABS Control Module -J104-



Caution

Do not confuse the brake lines when connecting them to the tandem brake master cylinder and the ABS Hydraulic Unit -N55-. Mark the installed position before removing the lines.

Do not bend the brake lines near the ABS Hydraulic Unit -N55-!

Get the coding from the ABS Control Module -J104- and write it down.

Use the Vehicle Diagnostic Tester.

- ◆ Chassis
- ◆ Brake System
- ◆ Anti-lock braking system ABS/ASR Mark 70
- ◆ Function
- ◆ Check coding in the ABS control module J104



Note

Disconnect battery ground strap for all further work. See if a coded radio is installed. Get the anti-theft code beforehand, if necessary.



Caution

Disconnecting the battery can result in damage to electronic components.

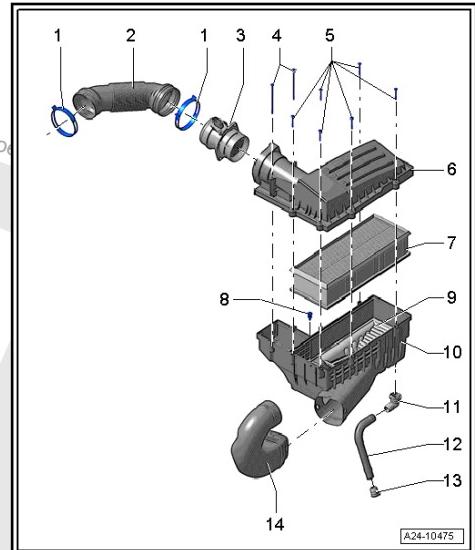
- ◆ Complete the steps for disconnecting the battery.

- Remove the engine cover. Refer to ⇒ Rep. Gr. 10; Engine Cover; Engine Cover, Removing and Installing.



- Remove the battery. Refer to ⇒ Electrical Equipment; Rep. Gr. 27; Battery, Removing and Installing.

Vehicles with a gasoline engine

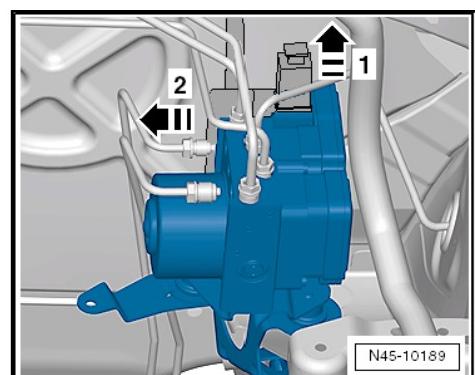


- Remove the air filter. Refer to ⇒ Rep. Gr. 24; Air Filter; Overview - Air Filter Housing.
- If necessary, remove the intake hose -2-. Refer to ⇒ Rep. Gr. 24; Air Filter; Overview - Air Filter Housing.
- To do this, loosen clamps -1-.
- Seal the openings with the Engine Bung Set -VAS6122-.

Vehicles with a diesel engine

- Remove the air filter. Refer to ⇒ Rep. Gr. 23; Air Filter; Overview - Air Filter Housing.
- If necessary, remove the intake hose -2-. Refer to ⇒ Rep. Gr. 23; Air Filter; Overview - Air Filter Housing.
- To do this, loosen clamps -1-.
- Seal the openings with the Engine Bung Set -VAS6122-.

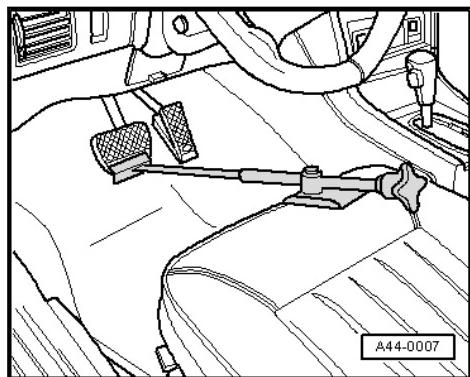
Continuation for all vehicles



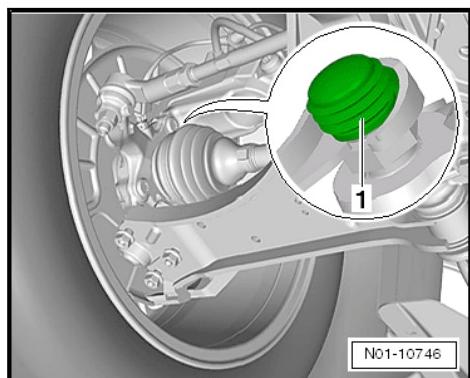
- Remove the battery tray. Refer to ⇒ Electrical Equipment; Rep. Gr. 27; Battery; Battery Tray, Removing and Installing.
- Release the connector from the control module in the -direction of the arrow 1-.
- Remove the connector from the control module in the -direction of the arrow 2-.



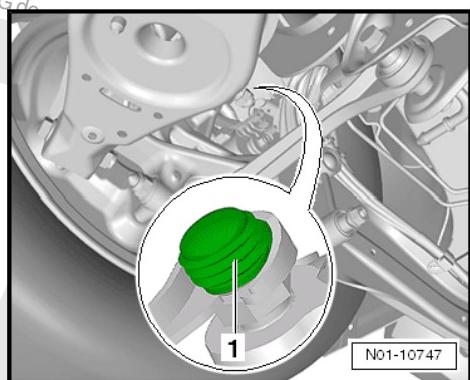
- Install the Brake Pedal Actuator -VAG1869/2-.



- Remove front left caps -1-.

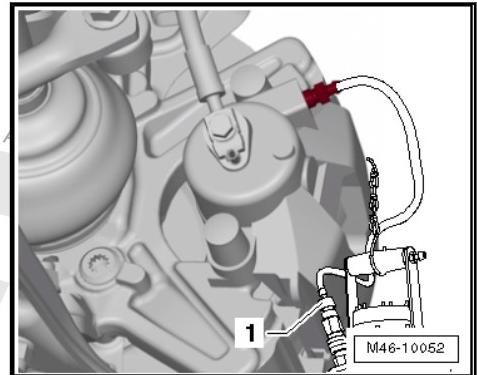


- Remove rear left caps -1-.

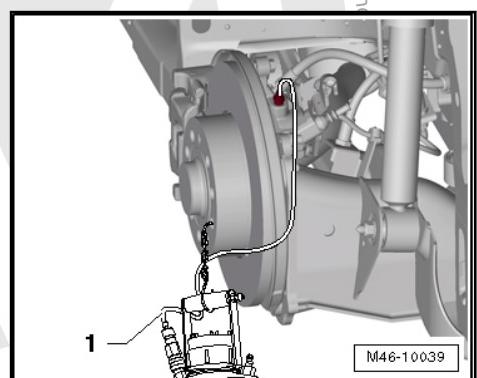


Use suitable bleeder hose. It must fit tightly on bleeder valve so that no air gets into brake system.

- Attach the bleeder bottle bleed hose -1- to the left front brake caliper bleed valve.



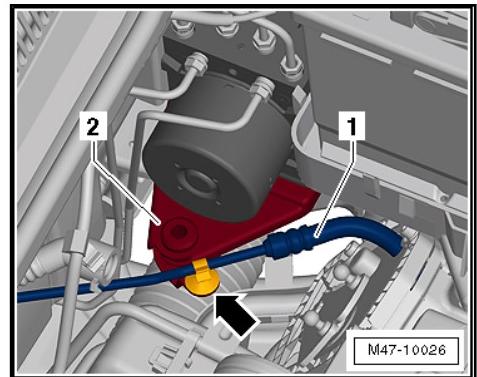
- Open the bleed valve.
- Attach the bleeder bottle bleed hose -1- to the left rear brake caliper bleed valve.



- Open the bleed valve.
- Push the brake pedal with the Brake Pedal Actuator -VAG1869/2- at least 60 mm.
- Close left front and left rear bleeder valves.

Do not remove the Brake Pedal Actuator -VAG1869/2-.

- If equipped, unclip hydraulic line -1- at the bracket -2- -arrows-.

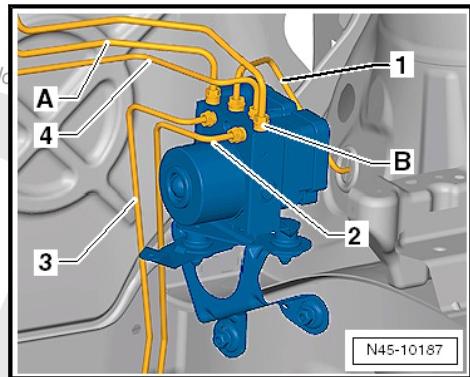


Continuation for all vehicles:

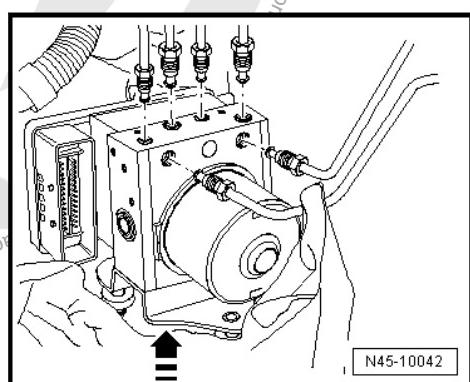
- Place a lint-free cloth under the ABS Control Module -J104- and the ABS Hydraulic Unit -N55-.

Make sure no brake fluid gets onto contacts.

- Mark brake lines -A- and -B- from brake master cylinder.



- Remove the brake lines -A- and -B- from the ABS Hydraulic Unit -N55-.
- Close the brake lines and threaded holes immediately using Plugs -1H0 698 311 A-.
- Mark brake lines -1- to -4-, unscrew and seal.
- Remove the ABS Hydraulic Unit -N55- and the ABS Control Module -J104- in -direction of arrow- and pull upward out of the shock absorbers.



- Remove the ABS Hydraulic Unit -N55- with the ABS Control Module -J104-.

Installing

Installation is the reverse of removal, with special attention to the following:



Note

- ◆ Remove the plugs on the new ABS Hydraulic Unit -N55- only when installing the corresponding brake line.
- ◆ Brake fluid will leak out if the plugs are removed too early from the ABS Hydraulic Unit -N55-. The system will then not have sufficient brake fluid and will not adequately bleed.



WARNING

When installing, make sure the rubber buffers are not pushed out of the bracket. Make sure that the ABS Hydraulic Unit -N55- is secure after installing it otherwise malfunctions can occur.



- Connect the battery. Refer to ⇒ Electrical Equipment; Rep. Gr. 27; Battery; Disconnecting and Connecting.
- Remove the Brake Pedal Actuator -VAG1869/2-.
- Bleed the brake system. Refer to ⇒ [S1.3 ystem, Bleeding](#), [page 132](#).

If a new ABS Control Module -J104- was installed, it must be coded.

Use the Vehicle Diagnostic Tester.

- ◆ [Chassis](#)
- ◆ [Brake System](#)
- ◆ [Anti-lock braking system ABS/ASR Mark 70](#)
- ◆ [Function](#)
- ◆ [ABS Control Module J104, coding](#)

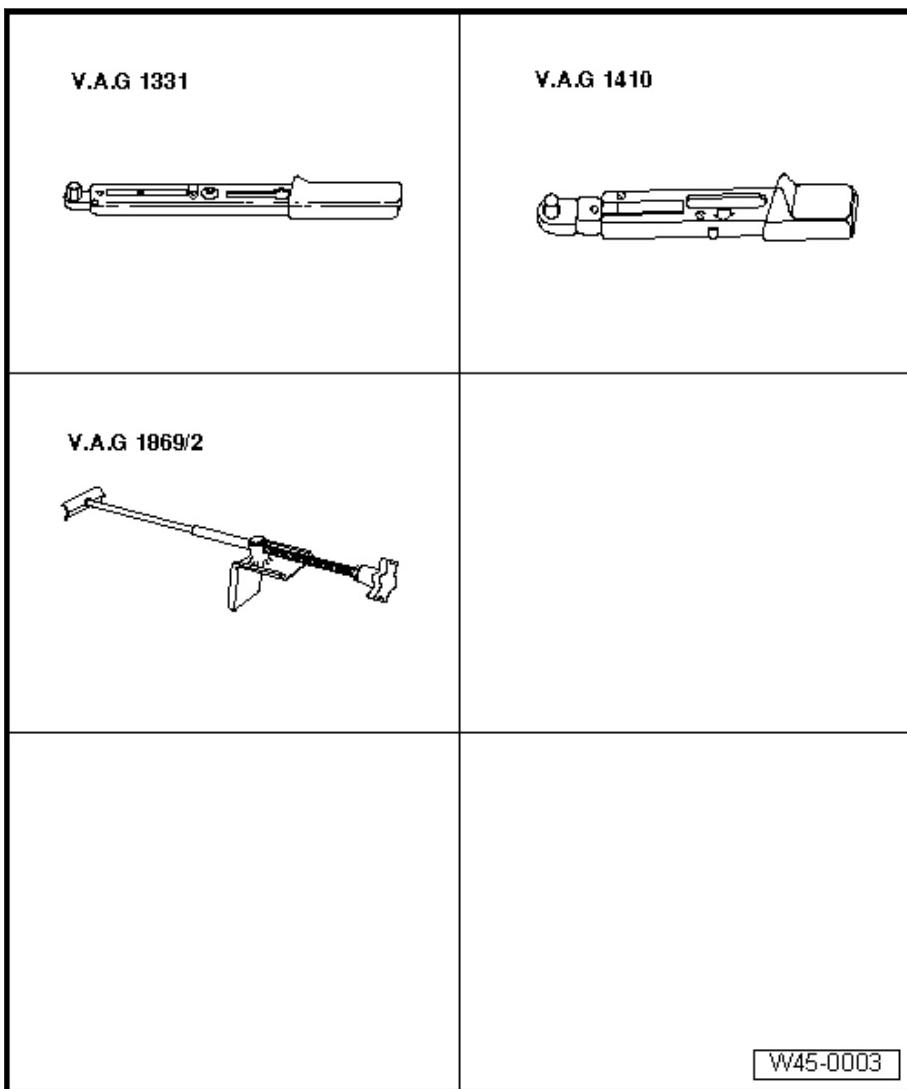
Tightening Specifications

Component	Tightening specification
Bolt for ABS Hydraulic Unit -N55- to bracket	8 Nm
Brake lines to ABS Hydraulic Unit -N55-	
Thread M10 x 1	14 Nm
Thread M12 x 1	14 Nm
removing and installing	Refer to ⇒ Rep. Gr. 24; Air Filter; Overview - Air Filter Housing.
Diesel engine	Refer to ⇒ Rep. Gr. 23; Air Filter; Overview - Air Filter Housing.
Engine Cover	Refer to ⇒ Rep. Gr. 10; Engine Cover; Engine Cover, Removing and Installing.
Battery	Refer to ⇒ Electrical Equipment; Rep. Gr. 27; Battery, Removing and Installing.
Battery tray	Refer to ⇒ Electrical Equipment; Rep. Gr. 27; Battery; Battery Tray, Removing and Installing.

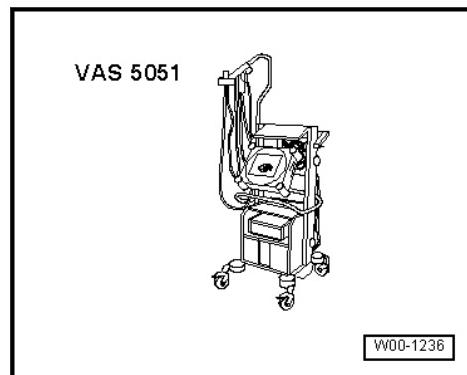


4 Special Tools

Special tools and workshop equipment required

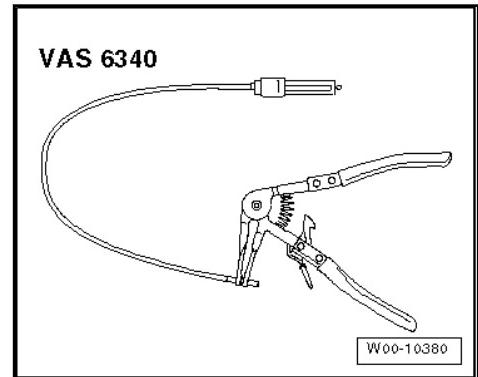


- ◆ Torque Wrench 1331 5-50Nm -VAG1331-
- ◆ Torque Wrench 1410 -VAG1410-
- ◆ Brake Pedal Actuator -VAG1869/2-.
- ◆ Vehicle Diagnostic Tester

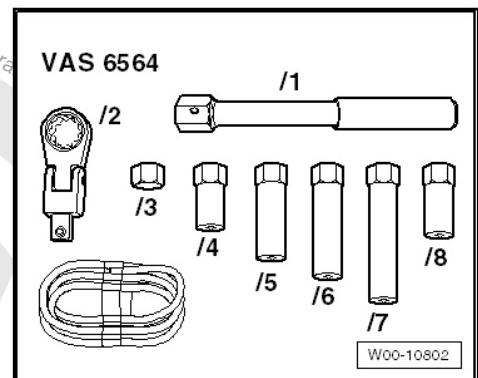




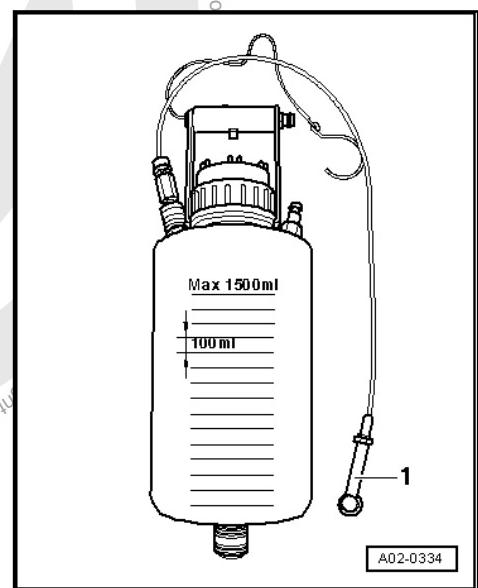
◆ Hose Clip Pliers -VAS6340-



◆ Brake Bleeding Tool Set -VAS6564-



◆ Bleeder Bottle





46 – Mechanical Components

1 Description and Operation

⇒ [-1.1 Front Brakes", page 76](#)

⇒ [-1.2 Rear Brakes", page 82](#)

⇒ [-1.3 Parking Brake Lever", page 88](#)

⇒ [B1.4 rake, Adjusting", page 89](#)

⇒ [-1.5 Brake Pedal", page 91](#)

1.1 Overview - Front Brakes

⇒ [-1.1.1 Front Brakes, FS III", page 76](#)

⇒ [-1.1.2 Front Brakes, FN 3 15 Inch", page 78](#)

⇒ [-1.1.3 Front Brakes, FN 3 16 Inch", page 80](#)

1.1.1 Overview - Front Brakes, FS III



Note

- ◆ After replacing brake pads, depress brake pedal several times firmly to properly seat brake pads in their normal operating position.
- ◆ Use Brake Charger/Bleeder Unit -VAS5234- to extract brake fluid from brake fluid reservoir.
- ◆ Install the Brake Pedal Actuator -VAG1869/2- to relieve pressure before removing a brake caliper or disconnecting a brake hose.



1 - Bolt

- 12 Nm
- Hex bolt M6x10 changed from TORX® bolt M6x12
- Replace hex bolt with hex bolt and TORX® bolt with TORX® bolt

2 - Brake Rotor

- Internally vented, 280 mm diameter
- Thickness 22 mm
- Wear limit: 19 mm
- Replace on both sides of the axle
- Remove brake caliper before removing

3 - Bolt

- 4 Nm

4 - Brake Pads

- Thickness 14 mm without backing plate
- With wear indicator
- When wear limit is reached (limit: approximately 4 mm) the warning lamp in instrument cluster will come on.
- Wear limit: 2 mm without backing plate
- Check the thickness. For maintenance. Refer to → Maintenance; Booklet ; Front and Rear Brake Pads, Checking Thickness.
- Replace on both sides of the axle
- Removing and installing. Refer to [P2.1.1 ads, Brake Caliper FS III](#), page 94 .

5 - Harness Connector

- Brake pad wear indicator

6 - Brake Caliper

- Do not remove the brake hose when changing the brake pads.
- Removing and installing. Refer to [C2.2.1 aliper FS III](#), page 100
- Servicing. Refer to [-2.1.1 Front Brake Caliper, FS III](#), page 134

7 - Guide Pin

- 30 Nm

8 - Cap

- Remove

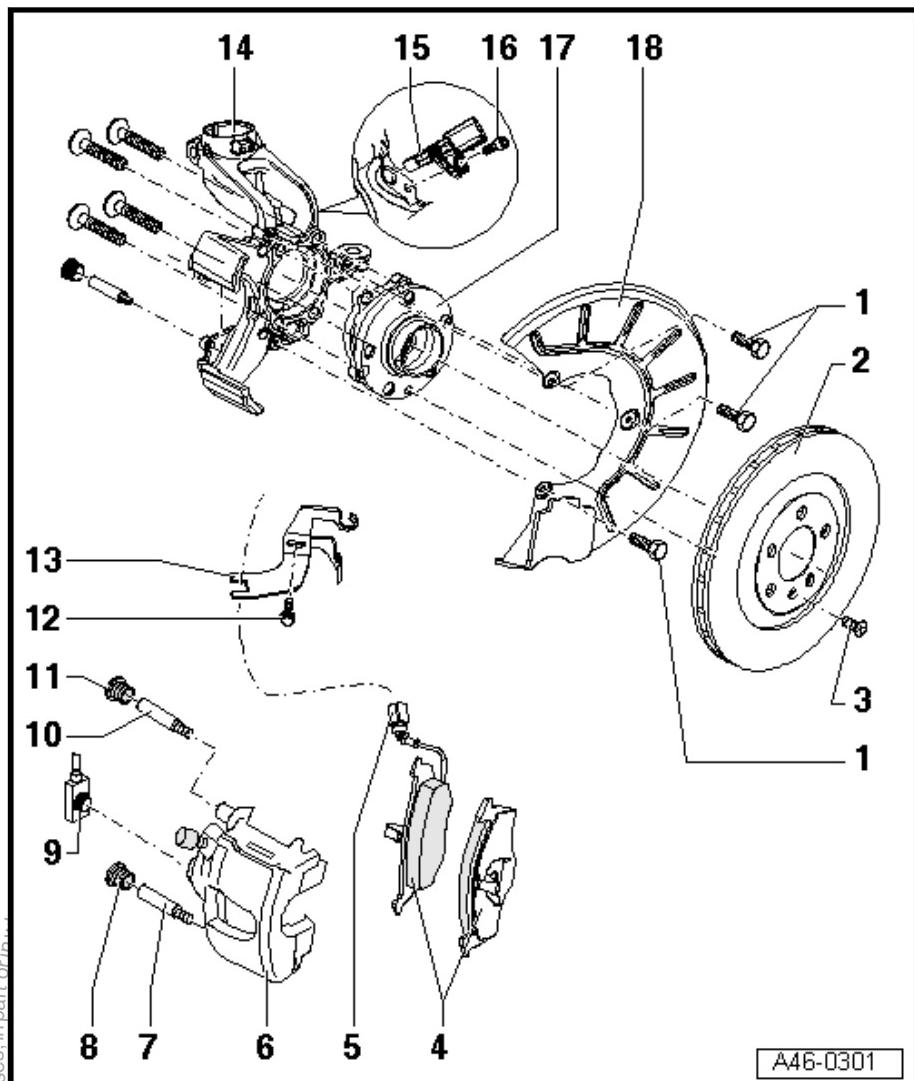
9 - Brake Hose With Ring Connection and Banjo Bolt

- 35 Nm

10 - Guide Pins

- 30 Nm

11 - Cap



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- Remove

12 - Bolt

13 - Bracket

14 - Wheel Bearing Housing

- With integrated brake carrier

15 - ABS Speed Sensor

- Before inserting sensor, clean inner surface of the hole and coat with Hot Bolt Paste -G 052 112 A3-.

16 - Hex Socket Bolt

- 8 Nm

17 - Wheel Bearing/Wheel Bearing Unit

- The ABS sensor ring is installed in the wheel bearing

18 - Cover Plate

1.1.2 Overview - Front Brakes, FN 3 15 Inch



Note

- ◆ After replacing brake pads, depress brake pedal several times firmly to properly seat brake pads in their normal operating position.
- ◆ Use Brake Charger/Bleeder Unit -VAS5234- to extract brake fluid from brake fluid reservoir.
- ◆ Install the Brake Pedal Actuator -VAG1869/2- to relieve pressure before removing a brake caliper or disconnecting a brake hose.



1 - Bolt

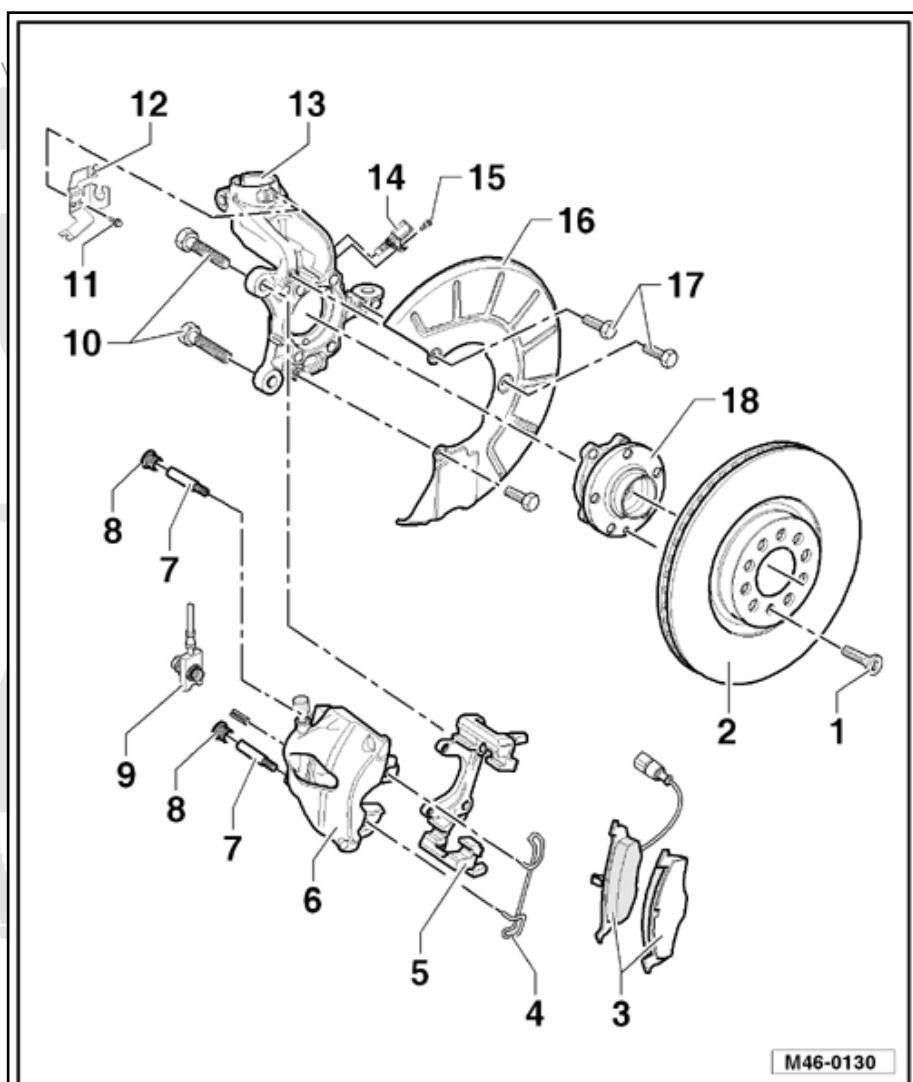
- 4 Nm

2 - Brake Rotor

- Internally vented, 288 mm diameter
- Thickness 25 mm
- Wear limit: 22 mm
- Replace on both sides of the axle
- Remove brake caliper before removing

3 - Brake Pads

- Thickness 14 mm without backing plate
- With wear indicator
- When wear limit is reached (limit: approximately 4 mm) the warning lamp in instrument cluster will come on.
- Wear limit: 2 mm without backing plate
- Check the thickness. For maintenance. Refer to [Maintenance; Booklet ; Front and Rear Brake Pads, Checking Thickness.](#)
- Replace on both sides of the axle
- Removing and installing. Refer to [P2.1.2 ads, Brake Caliper FN3", page 97 .](#)



4 - Spring

- Insert in both holes of brake caliper

5 - Brake Carrier

- Bolt to wheel bearing housing

6 - Brake Caliper

- Do not remove the brake hose when changing the brake pads.
- Removing and installing. Refer to [C2.2.2 aliper FN3", page 102 .](#)
- Servicing. Refer to [-2.1.2 Front Brake Caliper, FN 3", page 135 .](#)

7 - Guide Pin

- 30 Nm

8 - Cap

- Remove

9 - Brake Hose With Ring Connection and Banjo Bolt

- 35 Nm

10 - Ribbed Bolt

- 190 Nm
- Clean if using again.

11 - Bolt



12 - Bracket

13 - Wheel Bearing Housing

- With fastened brake carrier

14 - ABS Speed Sensor

- Before inserting sensor, clean inner surface of the hole and coat with Hot Bolt Paste -G 052 112 A3-.

15 - Hex Socket Bolt

- 8 Nm

16 - Cover Plate

17 - Bolt

- 12 Nm
- Hex bolt M6x10 changed from TORX® bolt M6x12
- Replace hex bolt with hex bolt and TORX® bolt with TORX® bolt

18 - Wheel Bearing/Wheel Bearing Unit

- The ABS sensor ring is installed in the wheel bearing

1.1.3 Overview - Front Brakes, FN 3.16 Inch



Note

- ◆ After replacing brake pads, depress brake pedal several times firmly to properly seat brake pads in their normal operating position.
- ◆ Use Brake Charger/Bleeder Unit -VAS5234- to extract brake fluid from brake fluid reservoir.
- ◆ Install the Brake Pedal Actuator -VAG1869/2- to relieve pressure before removing a brake caliper or disconnecting a brake hose.



1 - Bolt

- 12 Nm

2 - Brake Rotor

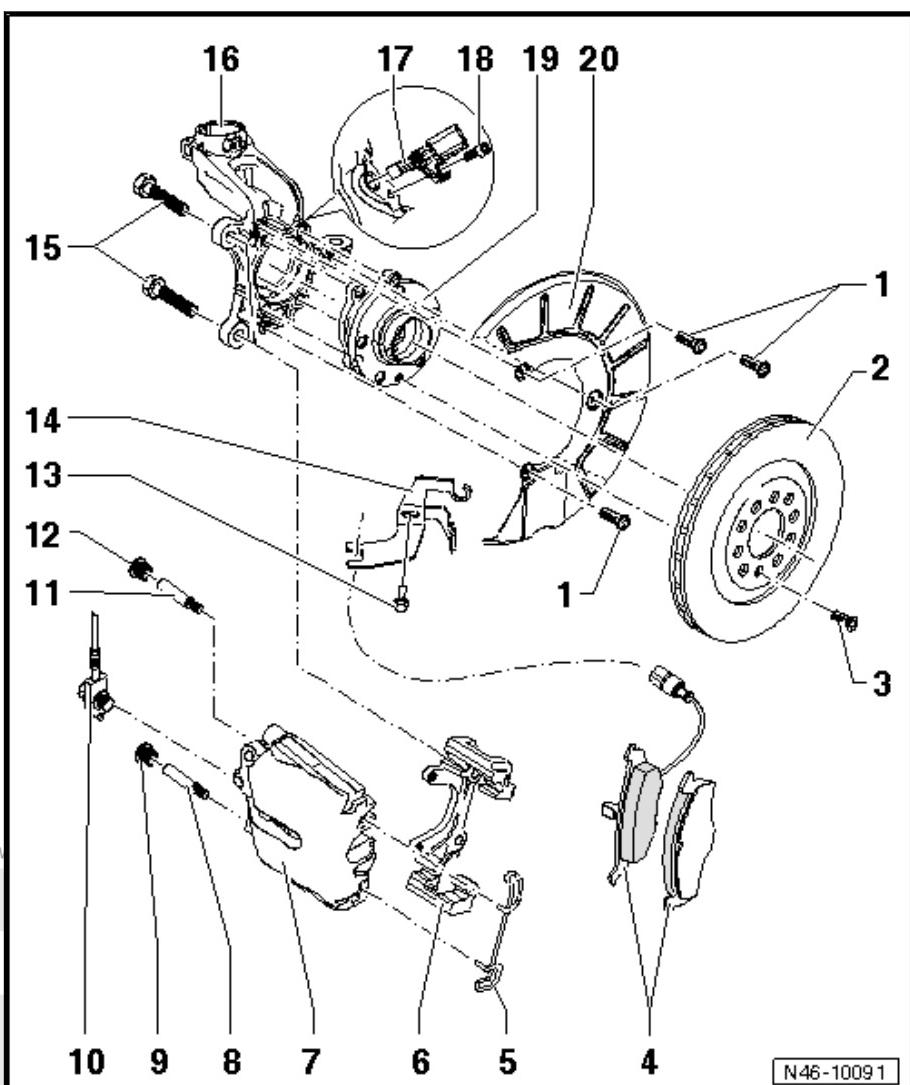
- Internally vented, 312 mm diameter
- Thickness 25 mm
- Wear limit: 22 mm
- Replace on both sides of the axle
- Remove brake caliper and brake carrier before removing

3 - Bolt

- 4 Nm

4 - Brake Pads

- Thickness 14 mm without backing plate
- With wear indicator
- When wear limit is reached (limit: approximately 4 mm) the warning lamp in instrument cluster will come on.
- Wear limit: 2 mm without backing plate
- Check the thickness. For maintenance. Refer to [Maintenance; Booklet ; Front and Rear Brake Pads, Checking Thickness.](#)
- Replace on both sides of the axle
- Removing and installing. Refer to [P2.1.2 ads, Brake Caliper FN3", page 97](#)



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5 - Spring

- Insert in both holes of brake caliper

6 - Brake Carrier

- Bolt to wheel bearing housing

7 - Brake Caliper

- Do not remove the brake hose when changing the brake pads.
- Removing and installing. Refer to [C2.2.2 aliper FN3", page 102](#).
- Servicing. Refer to [-2.1.2 Front Brake Caliper, FN 3", page 135](#).

8 - Guide Pin

- 30 Nm

9 - Cap

- Remove

10 - Brake Hose With Ring Connection and Banjo Bolt

- 35 Nm

11 - Guide Pins

- 30 Nm



12 - Cap

- Remove

13 - Bolt

14 - Bracket

15 - Ribbed Bolt

- 190 Nm
- Clean if using again.

16 - Wheel Bearing Housing

- With fastened brake carrier

17 - ABS Speed Sensor

- Before inserting sensor, clean inner surface of the hole and coat with Hot Bolt Paste -G 052 112 A3-.

18 - Hex Socket Bolt

- 8 Nm

19 - Wheel Bearing/Wheel Bearing Unit

- The ABS sensor ring is installed in the wheel bearing

20 - Cover Plate

1.2 Overview - Rear Brakes

⇒ [-1.2.1 Rear Brakes, CII 41 TRW FWD", page 82](#)

⇒ [-1.2.2 Rear Brakes, CII 41 TRW AWD", page 84](#)

⇒ [-1.2.3 Rear Brakes, Bosch", page 86](#)

1.2.1 Overview - Rear Brakes, CII 41 TRW FWD



Note

- ◆ After replacing brake pads, depress brake pedal several times firmly to properly seat brake pads in their normal operating position.
- ◆ Use the Brake Charger/Bleeder Unit -VAS5234- to extract brake fluid from brake fluid reservoir.
- ◆ Install the Brake Pedal Actuator -VAG1869/2- to relieve pressure before removing a brake caliper or disconnecting a brake hose.



1 - ABS Speed Sensor

- Before inserting sensor, clean inner surface of the hole and coat with Hot Bolt Paste -G 052 112 A3-.

2 - Hex Socket Bolt

- 8 Nm

3 - Internal Multi-Point Bolt

- 90 Nm +90° additional turn
- Always replace if removed

4 - Wheel Bearing Housing

5 - Cover plate

6 - Hex Bolt

- 9 Nm

7 - Wheel Bearing/Wheel Bearing Unit

8 - Bolt

- Refer to ⇒ Suspension, Wheels, Steering; Rep. Gr. 42; Overview - Wheel Bearing Housing, Trailing Arm (FWD)

9 - Dust Cap

- Pressing off and driving on. Refer to ⇒ Suspension, Wheels, Steering; Rep. Gr. 42; Wheel Bearing/Wheel Hub Unit, Removing and Installing.

10 - Brake Rotor

- Brake caliper CII 41 (15"): 256 mm diameter
- Brake caliper CII 41 (16"): 282 mm diameter
- Thickness: 12 mm
- Wear limit: 10 mm
- Always replace on both sides of axle if worn.
- Remove brake caliper before removing
- For the allocation. Refer to the Parts Catalog.

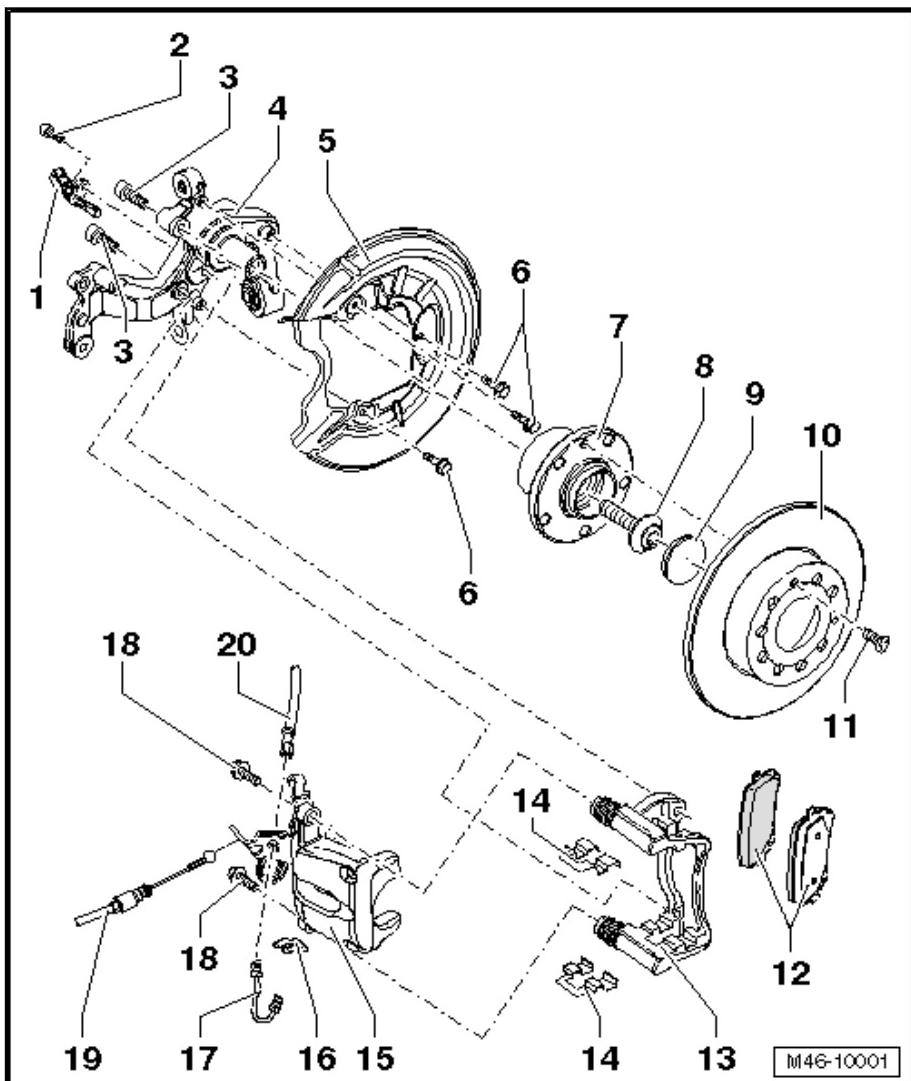
11 - Bolt

- 4 Nm

12 - Brake Pads

- Thickness: 11 mm without backing plate
- Wear limit: 2 mm without backing plate
- Check the thickness. For maintenance. Refer to ⇒ Maintenance; Booklet ; Front and Rear Brake Pads, Checking Thickness.
- Replace on both sides of the axle
- Removing and installing. Refer to ⇒ P2.3.1 ads, Rear Brakes CII 41 TRW FWD", page 103 .

13 - Brake Carrier With Guide Pins and Protective Caps



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- Supplied as an assembled replacement part with sufficient grease on guide pins
- If the caps or guide pins are damaged, install the repair kit. Use the supplied grease packet to lubricate the guide pins.
- For the allocation. Refer to the Parts Catalog.

14 - Brake Pad Retaining Plate

- Always replace when pads are replaced

15 - Brake Caliper

- Do not remove the brake hose when changing the brake pads.
- Removing and installing. Refer to [⇒ C2.4.1 aliper, CII 41 TRW FWD", page 111](#).
- Servicing. Refer to [⇒ 2.2.1 Rear Brake Caliper, CII 41 TRW", page 136](#).
- After repair work or replacing, the parking brake cable must be adjusted first.
- Adjusting the parking brake. Refer to [⇒ B1.4.1 rake, Adjusting, Through 12/06/2009", page 89](#).

16 - Hose Bracket

17 - Brake Line

- 14 Nm

18 - Hex Bolt

- 35 Nm
- Self-locking
- Replace

19 - Parking Brake Cable

- Adjusting the parking brake. Refer to [⇒ B1.4.1 rake, Adjusting, Through 12/06/2009", page 89](#).
- For the allocation. Refer to the Parts Catalog.

20 - Brake Hose

1.2.2 Overview - Rear Brakes, CII 41 TRW AWD

Note

- ◆ After replacing brake pads, depress brake pedal firmly several times with vehicle stationary so that the brake pads are properly seated in their normal operating position.
- ◆ Use Brake Charger/Bleeder Unit -VAS5234- to extract brake fluid from brake fluid reservoir.
- ◆ Install the Brake Pedal Actuator -VAG1869/2- to relieve pressure before removing a brake caliper or disconnecting a brake hose.



1 - Internal Multi-Point Bolt

- 90 Nm +90° additional turn
- Always replace if removed

2 - ABS Speed Sensor

- Before inserting sensor, clean inner surface of the hole and coat with Hot Bolt Paste -G 052 112 A3-.

3 - Hex Socket Bolt

- 8 Nm

4 - Wheel Bearing Housing

5 - Cover Plate

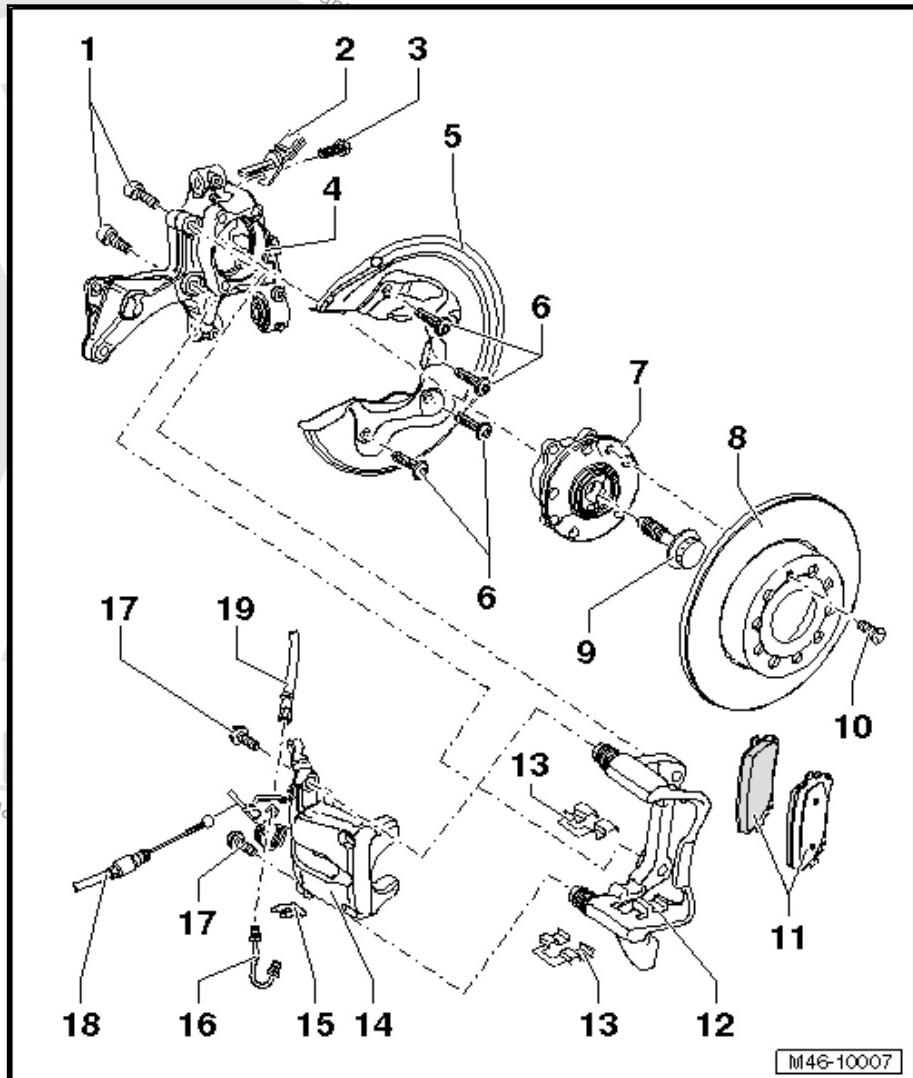
6 - Bolt

- 12 Nm
- M6 x 12

7 - Wheel Bearing/Wheel Bearing Unit

8 - Brake Rotor

- 15 inch diameter!
256 mm
- Thickness for 15 inch:
12 mm
- Wear limit for 15 inch:
10 mm
- Always replace on both sides of axle if worn.
- Remove brake caliper before removing



9 - Bolt

- Refer to ⇒ Suspension, Wheels, Steering; Rep. Gr. 42; Overview - Driveshaft

10 - Phillips Head Screw

- 4 Nm

11 - Brake Pads

- Thickness: 11 mm without backing plate
- Wear limit: 2 mm without backing plate
- Check the thickness. For maintenance. Refer to ⇒ Maintenance; Booklet ; Front and Rear Brake Pads, Checking Thickness.
- Replace on both sides of the axle
- Removing and installing. Refer to ⇒ P2.3.2 ads, Rear Brakes CII 41 TRW AWD", page 105 .

12 - Brake Carrier with Different Guide Pins and Protective Cap

- Supplied as an assembled replacement part with sufficient grease on guide pins
- If the caps or guide pins are damaged, install the repair kit. Use the supplied grease packet to lubricate the guide pins.
- Assembly guide: Refer to ⇒ Fig. "Installation Instructions, Brake Carrier:", page 86

13 - Brake Pad Retaining Plate

- Always replace when pads are replaced

14 - Brake Caliper



- Do not remove the brake hose when changing the brake pads.
- Removing and installing. Refer to [⇒ C2.4.2 aliper, CII 41 TRW AWD", page 112](#).
- Servicing. Refer to [⇒ -2.2.1 Rear Brake Caliper, CII 41 TRW", page 136](#).
- Adjusting the parking brake. Refer to [⇒ B1.4.1 rake, Adjusting, Through 12/06/2009", page 89](#).

15 - Hose Bracket

16 - Brake Line

- 14 Nm

17 - Hex Bolt

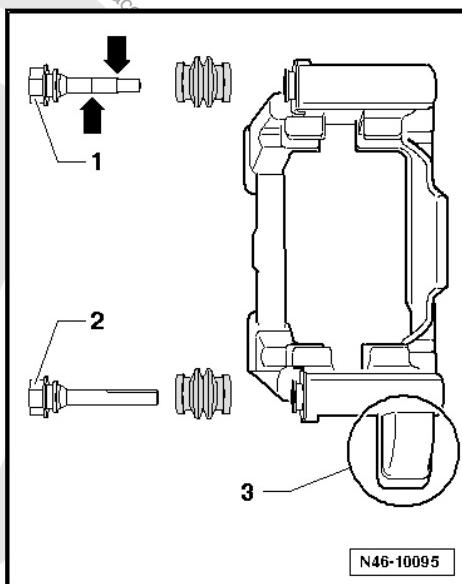
- 35 Nm
- Always replace if removed
- Self-locking

18 - Parking Brake Cable

- Adjusting the parking brake. Refer to [⇒ B1.4.1 rake, Adjusting, Through 12/06/2009", page 89](#).
- Removing and installing. Refer to [⇒ B2.5 rake Cable", page 117](#).

19 - Brake Hose

Installation Instructions, Brake Carrier:



- 1 - Shorter guide pin with stepping -arrows-, inlet side.
- 2 - Longer guide pin, outgoing.
- 3 - Vibration dampener, outgoing.

1.2.3 Overview - Rear Brakes, Bosch



Note

- ◆ After replacing brake pads, depress brake pedal firmly several times with vehicle stationary so that the brake pads are properly seated in their normal operating position.
- ◆ Use the Brake Charger/Bleeder Unit -VAS5234- or the Extractor -VAG1869/4- to extract brake fluid from brake fluid reservoir.
- ◆ Install the Brake Pedal Actuator -VAG1869/2- to relieve pressure before removing a brake caliper or disconnecting a brake hose.



1 - ABS Speed Sensor

- Before inserting sensor, clean inner surface of the hole and coat with Hot Bolt Paste -G 052 112 A3-.

2 - Bolt

- 8 Nm

3 - Bolt

- 90 Nm +90° additional turn
- Always replace if removed

4 - Wheel Bearing Housing

5 - Cover Plate

6 - Bolt

- 12 Nm
- M6 x 12

7 - Wheel Hub with Wheel Bearing

- Different on FWD and AWD
- For the allocation. Refer to the Parts Catalog.
- Refer to ⇒ Suspension, Wheels, Steering; Rep. Gr. 42; Rear Suspension, Driveshaft

8 - Bolt

- Different on FWD and AWD
- For the allocation. Refer to the Parts Catalog.
- Refer to ⇒ Suspension, Wheels, Steering; Rep. Gr. 42; Rear Suspension, Driveshaft

9 - Dust Cap

- Only on front wheel drive

10 - Brake Rotor

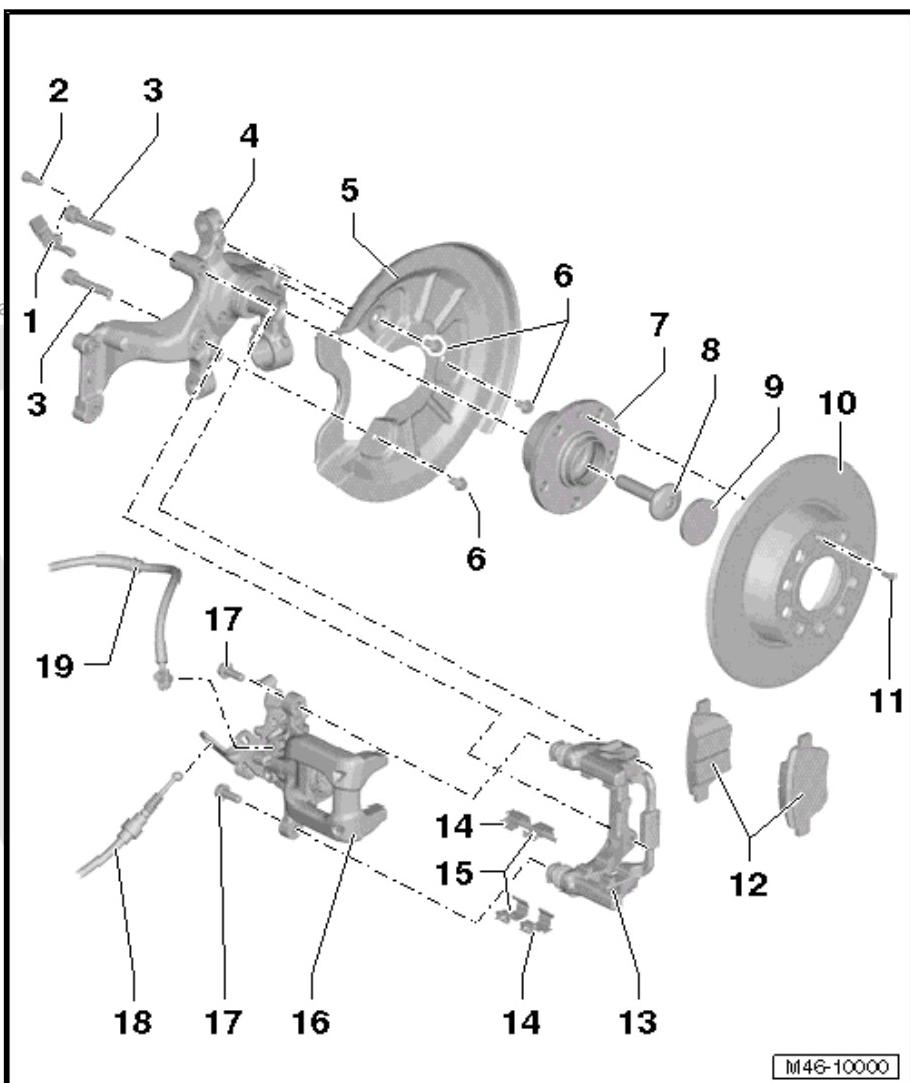
- Diameter 272 mm
- Thickness: 10 mm
- Wear limit: 8 mm
- Replace both sides if worn.
- Remove brake caliper before removing

11 - Bolt

- 4 Nm
- For securing the brake rotor

12 - Brake Pads

- Thickness: 12 mm without backing plate
- Wear limit: 2 mm without backing plate
- Check the thickness. For maintenance. Refer to ⇒ Maintenance; Booklet ; Front and Rear Brake Pads, Checking Thickness.
- Always replace on both axles



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- Removing and installing. Refer to [⇒ P2.3.3 ads, Bosch Rear Brakes", page 108](#).

13 - Brake Carrier With Different Guide Pins and Protective Cap

- Supplied as an assembled replacement part with sufficient grease on guide pins
- If the caps or guide pins are damaged, install the repair kit. Use the supplied grease packet to lubricate the guide pins.

14 - Brake Pad Retaining Plate

- Always replace when pads are replaced

15 - Brake Pad Retaining Plate

- Always replace when pads are replaced

16 - Brake Caliper

- Do not remove the brake hose when changing the brake pads.
- Removing and installing. Refer to [⇒ C2.4.3 aliper, Bosch Rear Brakes", page 114](#).
- Servicing. Refer to [⇒ -2.2.2 Rear Brake Caliper, Bosch", page 139](#)
- After servicing or replacing, parking brake cable must be adjusted first.
- Adjusting the parking brake. Refer to [⇒ B1.4.2 rake, Adjusting, From 12/06/2009", page 90](#).

17 - Bolt

- 35 Nm
- Self-locking
- Always replace after removing

18 - Parking Brake Cable

- Both tabs must be engaged in the brake caliper bracket
- Adjusting the parking brake. Refer to [⇒ B1.4.2 rake, Adjusting, From 12/06/2009", page 90](#).

19 - Brake Hose

- 35 Nm
- with banjo bolt and seals

1.3 Overview - Parking Brake Lever



1 - Parking Brake Lever

- Remove center console before removing.

2 - Hex Nut

- 20 Nm

3 - Trim for Parking Brake Lever

- Pull off forward
- Pry off release tab in rear bottom handle area -arrow- with a screwdriver
- With a leather version, leather in catch area is cut.

4 - Pull Rod

5 - Compensator Bracket

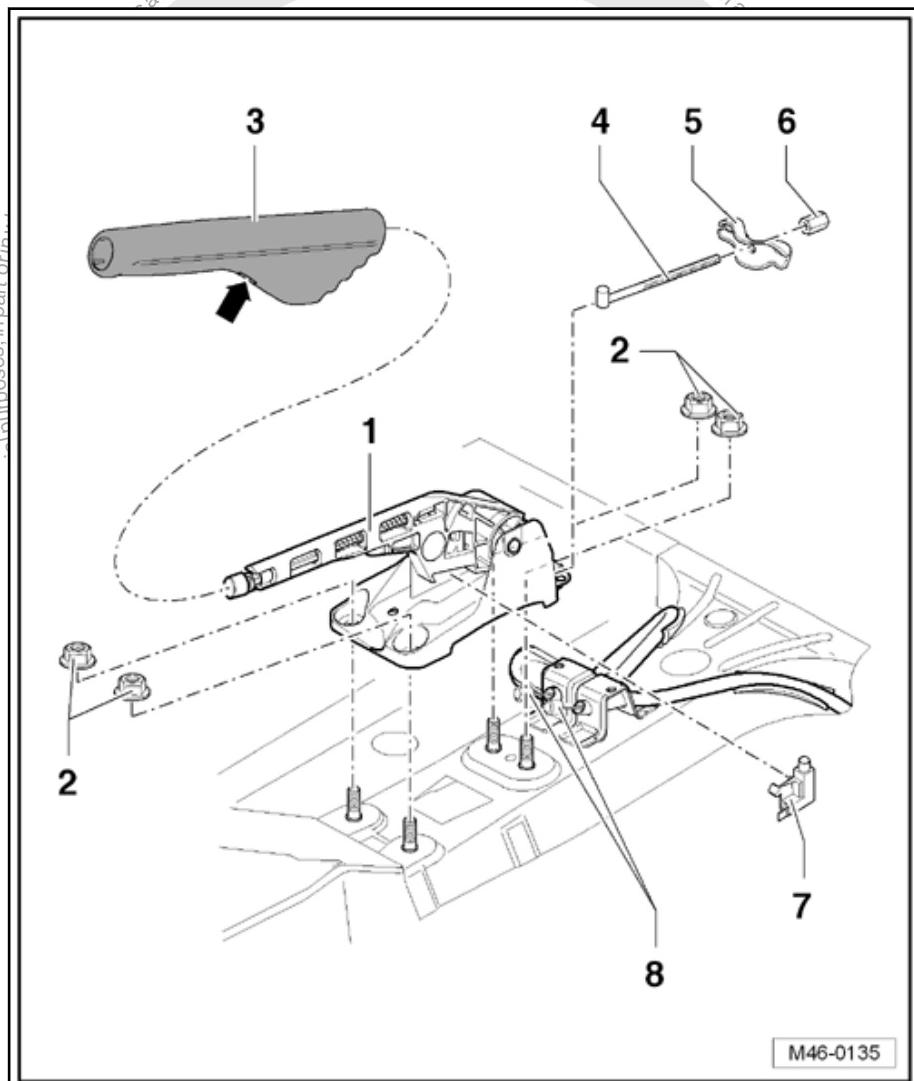
6 - Adjusting Nut

- Adjusting the parking brake. Refer to [B1.4.1 rake, Adjusting, Through 12/06/2009](#), page 89.

7 - Parking Brake Indicator Lamp Switch

8 - Parking Brake Cables

- Removing and installing. Refer to [B2.5 rake Cable](#), page 117.



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1.4 Parking Brake, Adjusting

[⇒ B1.4.1 rake, Adjusting, Through 12/06/2009](#), page 89

[⇒ B1.4.2 rake, Adjusting, From 12/06/2009](#), page 90

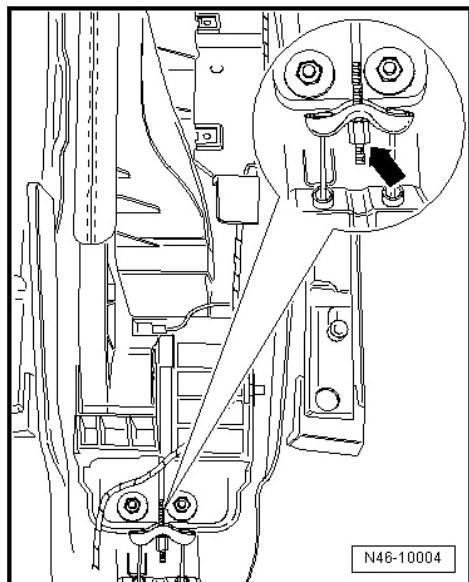
1.4.1 Parking Brake, Adjusting, Through 12/06/2009

A new adjustment is necessary only after replacing brake cables, brake calipers or brake discs.

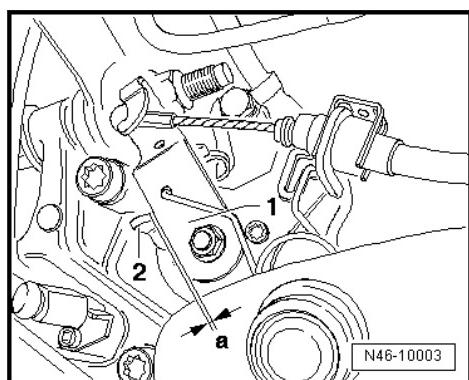
- Depending on the equipment level of the center console, remove only the cupholder, the rear cover or the entire center console. Refer to ⇒ Body Interior; Rep. Gr. 68; Storage Compartments, Covers and Trim.
- Press the brake pedal forcefully at least three times.
- Apply the parking brake 3 times and then release.

The parking brake lever must go back into the rest position by itself under the first detent.

- Parking brake lever in released position.
- Tighten the adjusting nut -arrow (magnified area)- so far, ...



- the lever -1- on the brake calipers lift off from their stops -2-.



- The distance -a- to the stop -2- on the left and right brake caliper must not be ≤ 1.5 mm.
- Check whether wheels turn freely.

Due to the automatic rear brake adjuster, there is no need to adjust the parking brake after making initial adjustment.

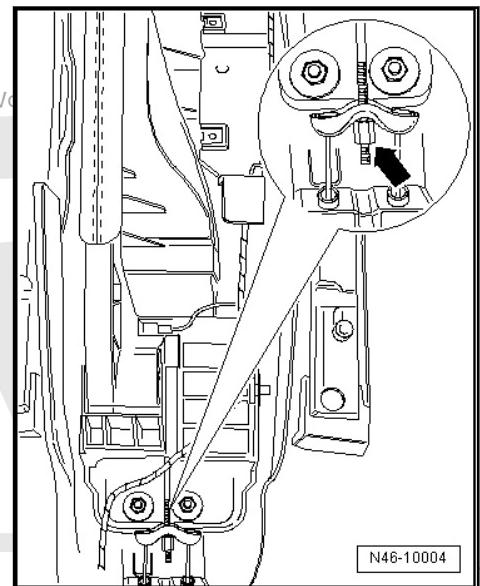
1.4.2 Parking Brake, Adjusting, From 12/06/2009

A new adjustment is necessary only after replacing brake cables, brake calipers or brake discs.

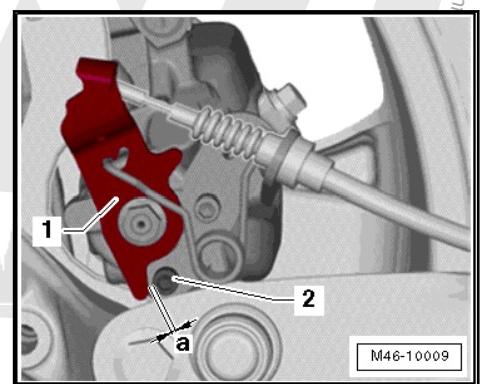
- Depending on the equipment level of the center console, remove only the cupholder, the rear cover or the entire center console. Refer to ⇒ Body Interior; Rep. Gr. 68; Storage Compartments, Covers and Trim.
- Press the brake pedal forcefully at least three times.
- Apply the parking brake 3 times and then release.

The parking brake lever must go back into the rest position by itself under the first detent.

- Parking brake lever in released position.
- Tighten the adjusting nut -arrow (magnified area)- so far, ...



- the lever -1- on the brake calipers lift off from their stops -2-.



- The distance -a- between the lever -1- to the stop -2- on the left and right brake calipers may be less than or equal to 1.5 mm together.
- Check whether wheels turn freely.

Due to the automatic rear brake adjuster, there is no need to adjust the parking brake after making initial adjustment.

1.5 Overview - Brake Pedal

⇒ 1.5.1 Brake Pedal", page 91

1.5.1 Overview - Brake Pedal



WARNING

The path of the brake pedal must not be shortened via extra floor mats.

Before installing, lubricate all bearing areas with Lubricating Grease -G 000 602-.



1 - Mounting Bracket

- Removing and installing. Refer to [B2.8 racket](#), page 121 .

2 - Hex Nut

- 25 Nm
- Always replace if removed
- Self-locking
- First tighten the hex nuts -A and B.

3 - Noise Insulation On the Brake Pedal

- Allocation → Electronic Parts Catalog

4 - Clamping Washer

5 - Brake Pedal

- Removing and installing. Refer to [P2.9 edal](#), page 124 .

6 - Hex Nut

- 25 Nm
- Always replace if removed
- Self-locking

7 - Cover

8 - Bearing Shell

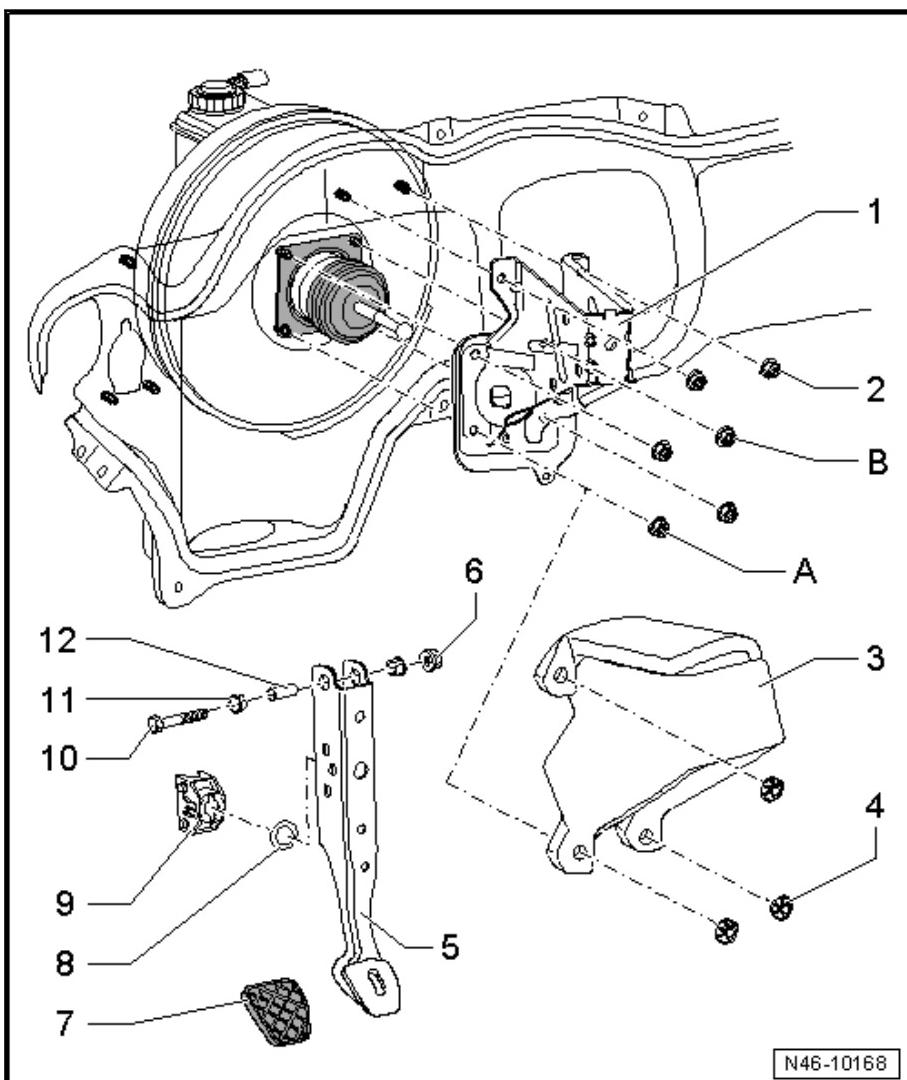
9 - Mount

- For the ball head on the brake booster push rod

10 - Hex Bolt

11 - Bearing Bushing

12 - Mounting Pin



1.5.2 Overview - Brake Pedal, RHD



WARNING

The path of the brake pedal must not be shortened via extra floor mats.

Grease all the bearing areas with Polycarbamide Grease -G 052 142 A2- before assembling.



1 - Twelve point bolt

- Always replace if removed
- 25 Nm

2 - Mounting bracket

- Removing and installing. Refer to [B2.8 racket", page 121](#).

3 - Hex bolt

- 25 Nm

4 - Hex nut

- Self-locking
- Always replace if removed
- 25 Nm

5 - Bearing bushing

6 - Hex nut

- Self-locking
- Always replace if removed
- 25 Nm

7 - Brake Pedal

- Removing and installing. Refer to [P2.9 edal", page 124](#).
- Separate the brake pedal from brake booster. Refer to [P2.6 edal, Removing from Brake Booster", page 119](#).
- Brake pedal to the brake booster, connecting. Refer to [P2.7 edal, Attaching to Brake Booster", page 120](#).

8 - Cover

9 - Mounting Pin

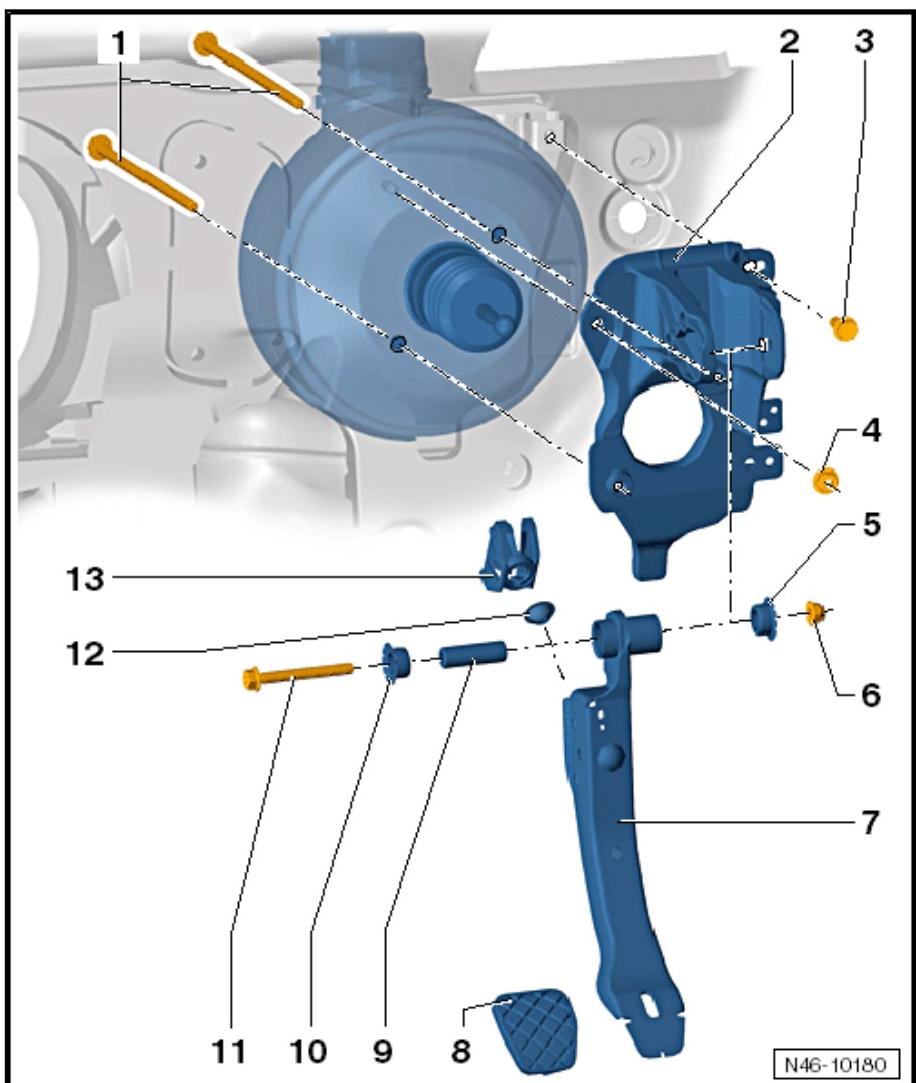
10 - Bearing bushing

11 - Hex bolt

12 - Bearing Shell

13 - Mount

- For the ball head on the brake booster push rod





2 Removal and Installation

- ⇒ [B2.1 rake Pads", page 94](#)
- ⇒ [B2.2 rake Caliper", page 100](#)
- ⇒ [B2.3 rake Pads", page 103](#)
- ⇒ [B2.4 rake Caliper", page 111](#)
- ⇒ [B2.5 rake Cable", page 117](#)
- ⇒ [P2.6 edal, Removing from Brake Booster", page 119](#)
- ⇒ [P2.7 edal, Attaching to Brake Booster", page 120](#)
- ⇒ [B2.8 racket", page 121](#)
- ⇒ [P2.9 edal", page 124](#)

2.1 Front Brake Pads

- ⇒ [P2.1.1 ads, Brake Caliper FS III", page 94](#)
- ⇒ [P2.1.2 ads, Brake Caliper FN3", page 97](#)

2.1.1 Brake Pads, Brake Caliper FS III

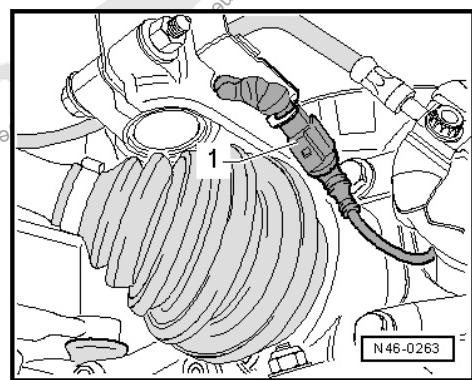
Special tools and workshop equipment required

- ◆ Torque Wrench 1331 5-50Nm -VAG1331-
- ◆ Piston Resetting Tool -T10145-

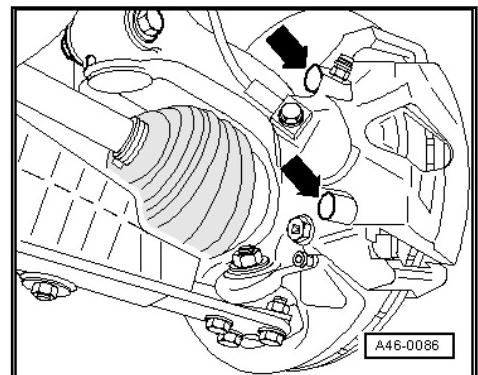
Removing

When Removing, Mark Brake Pads that Will Be Used Again.
Install In the Same Position, Otherwise Braking Effect Will Be
Uneven.

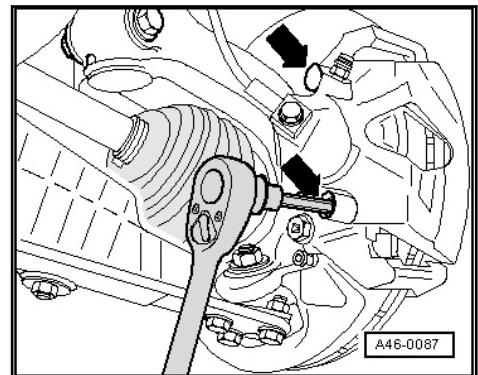
- Remove the wheels.
- Disconnect the connector -1- from the brake pad wear display.



- Remove caps -arrows-.



- Loosen both guide pins -arrows- and remove from brake caliper.



- Remove brake caliper and secure with wire so that the weight of the brake caliper does not burden or damage the brake hose.
- Remove brake pads from brake caliper.

Cleaning:



WARNING

Do not blow brake system using compressed air, the dust produced is harmful to health!

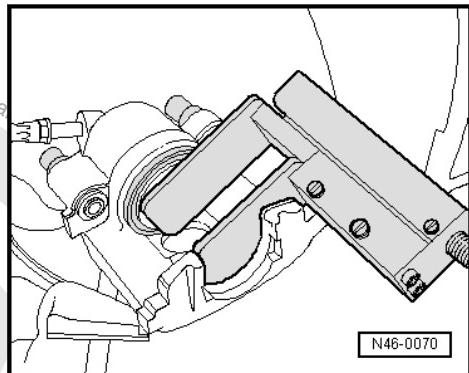
- Thoroughly clean the contact surface for brake pads on the brake carrier, remove corrosion.

Use Only Appropriate Solvents for Cleaning Brake Caliper.

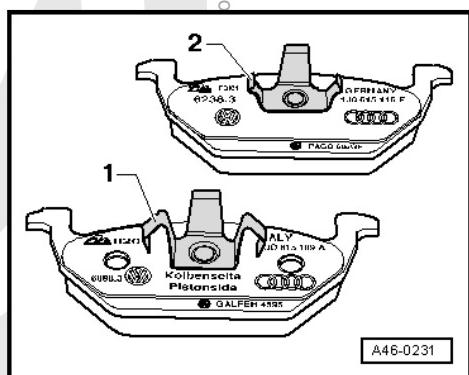
Installing

Before Pressing Pistons Into Cylinder Using Piston Resetting Tool, Brake Fluid Must Be Extracted From Brake Fluid Reservoir. Otherwise, Especially If Reservoir Has Been Topped Off, Fluid Will Overflow and Cause Damage.

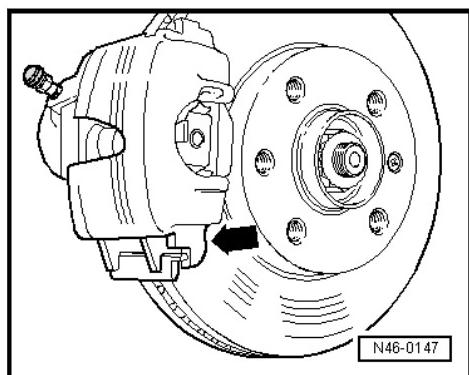
- Press the piston back.



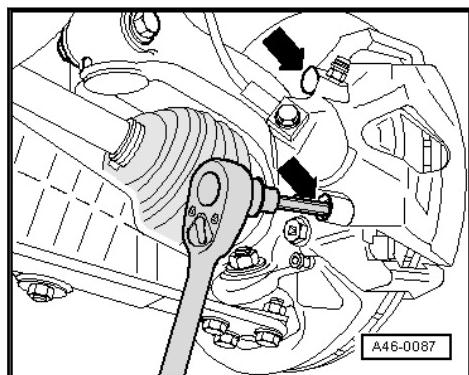
- Insert inner brake pad (piston side) -1- and outer brake pad -2- with retaining springs into brake caliper.



- ◆ Inside brake pad (piston side) with large 3-Finger clip -1-.
- ◆ Outside brake pad with small 3-finger clip -2- (black)
- Place brake caliper with brake pads on brake carrier first at bottom -arrow-.



- Tighten brake caliper to brake carrier using both guide pins.





- Pin of brake caliper must stand behind guide of brake carrier!
- Install both protective caps.
- Connect the connector for the brake pad wear indicator.
- Install the wheels.
- .



Note

- ◆ After replacing brake pads and before moving vehicle, always depress brake pedal several times firmly to properly seat brake pads in their normal operating position.
- ◆ Check brake fluid level after replacing brake pad.

Tightening Specifications

Component	Tightening Specification
Guide pin to brake carrier	30 Nm
Wheel bolt tightening specification	Refer to ⇒ Suspension, Wheels, Steering; Rep. Gr. 44; Wheel Bolt Tightening Specifications

2.1.2 Brake Pads, Brake Caliper FN3

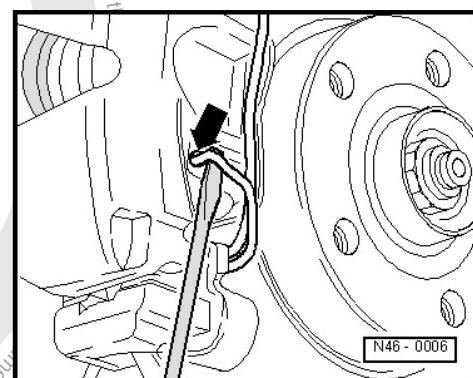
Special tools and workshop equipment required

- ◆ Torque Wrench 1331 5-50Nm -VAG1331-
- ◆ Piston Resetting Tool -T10145-

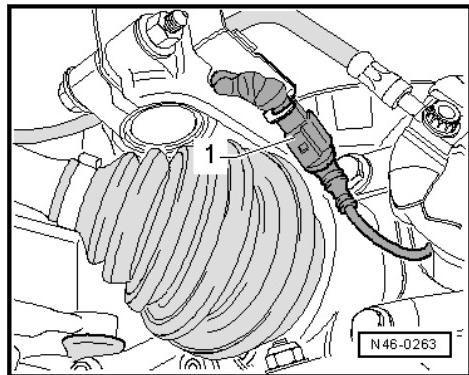
Removing

When Removing, Mark Brake Pads That Will Be Used Again.
Install in the Same Position, Otherwise Braking Effect Will Be Uneven.

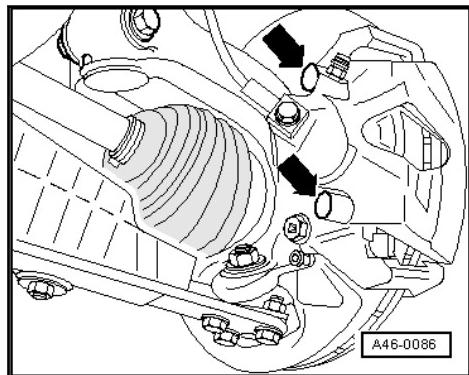
- Remove the wheels.
- Using screwdriver, pry off brake pad retaining spring from brake caliper -arrow- and remove.



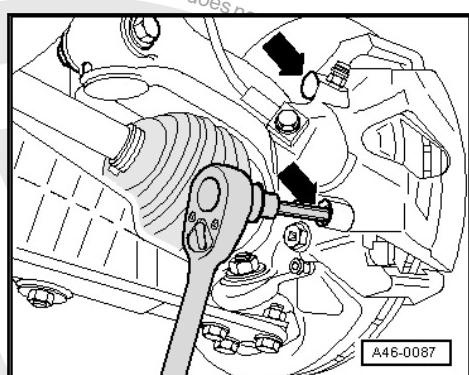
- Disconnect the connector -1- from the brake pad wear display.



- Remove caps -arrows-.



- Loosen both guide pins -arrows- and remove from brake caliper.



- Remove brake caliper and secure with wire so that the weight of the brake caliper does not burden or damage the brake hose.
- Remove brake pad from brake caliper or from brake carrier.

Cleaning:



WARNING

Do not blow brake system using compressed air, the dust produced is harmful to health!

- Thoroughly clean the contact surface for brake pads on the brake carrier, remove corrosion.
- Clean brake caliper, especially the adhesive surface for the brake pad, it must be free of residual adhesive and grease.

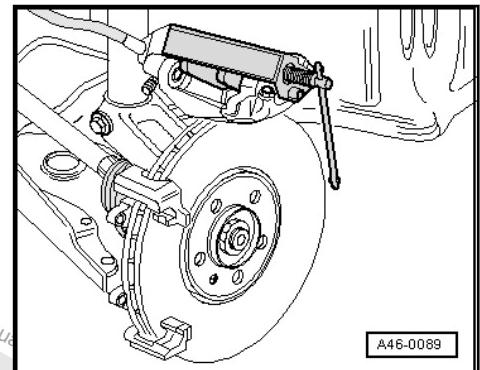


Use only appropriate solvents for cleaning brake caliper.

Installing

Before Pressing Pistons into Cylinder Using Piston Resetting Tool, Brake Fluid Must Be Extracted From Brake Fluid Reservoir. Otherwise, Especially If Reservoir Has Been Topped Off, Fluid Will Overflow and Cause Damage.

- Press the piston back.

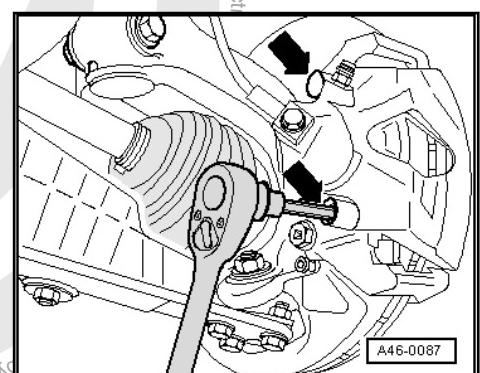


- Remove protective foil on backing plate of outer brake pad.
- Install outer brake pad on brake carrier.
- Insert inner brake pad with retaining spring in brake caliper (piston).

When installing brake caliper, make sure that brake pad is not affixed to brake caliper before the correct installation position has been reached.

Do not damage the adhesion surface.

- Tighten brake caliper to brake carrier using both guide pins.



- Install both protective caps.
- Install retaining spring in brake caliper.
- Connect the connector for the brake pad wear indicator.
- Install the wheels.



Note

- ◆ After replacing brake pads and before moving vehicle, always depress brake pedal several times firmly to properly seat brake pads in their normal operating position.
- ◆ Check brake fluid level after replacing brake pad.



Tightening Specifications

Component	Tightening Specification
Guide pin to brake carrier	30 Nm
Wheel bolt tightening specification	Refer to ⇒ Suspension, Wheels, Steering; Rep. Gr. 44; Wheel Installation Tightening Specifications.

2.2 Front Brake Caliper

⇒ C2.2.1 aliper FS III", page 100

⇒ C2.2.2 aliper FN3", page 102

2.2.1 Brake Caliper FS III

Special tools and workshop equipment required

- ◆ Torque Wrench 1331 5-50Nm -VAG1331-
- ◆ Brake Pedal Actuator -VAG1869/2-.

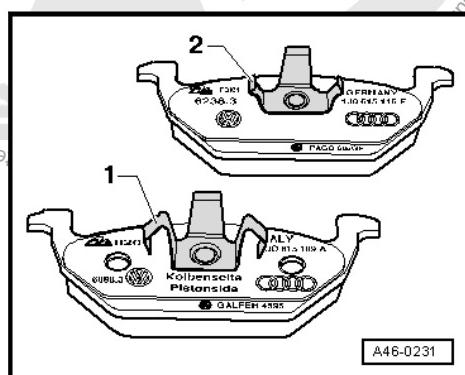
Removing

Work Procedure Applies Only for Replacing Or When Performing Subsequent Service Work on Brake Caliper.

- Remove the wheels.
- Disconnect the connector from the brake pad wear display.
- Attach the bleeder bottle bleed hose to the brake caliper bleed valve.
- Open the bleeder valve.
- Install the Brake Pedal Actuator -VAG1869/2-.
- Close the bleed valve and remove the bleeder bottle.
- Remove the brake hose.
- Remove both caps from the brake caliper bearing bushings.
- Loosen both guide pins and remove from brake caliper.
- Remove the brake caliper from the brake carrier.
- Remove the brake pads from the brake caliper.

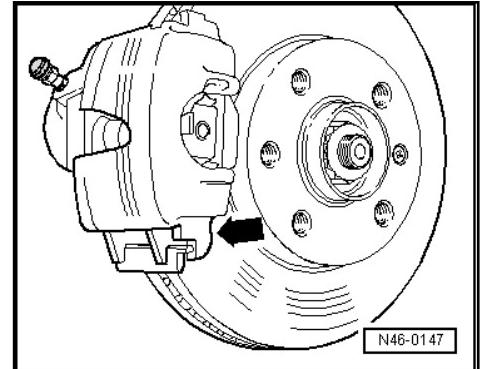
Installing

- Piston is pressed back.
- Insert inner brake pad (piston side) -1- and outer brake pad -2- with retaining springs into brake caliper.

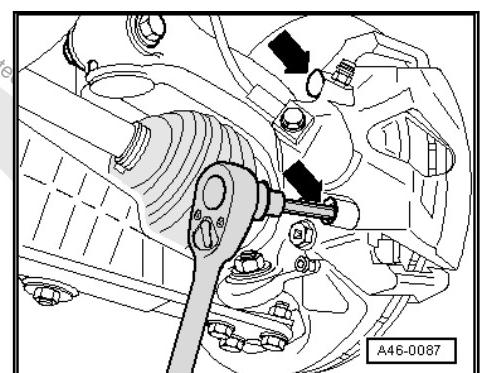




- ◆ Inside brake pad (piston side) with large 3-Finger clip -1-.
- ◆ Outside brake pad with small 3-finger clip -2- (black).
- Place brake caliper with brake pads on brake carrier first at bottom -arrow-.



- Tighten brake caliper to brake carrier using both guide pins.



- Pin of brake caliper must stand behind guide of brake carrier!
- Install both protective caps.
- Screw brake hose on brake caliper.
- Remove the Brake Pedal Actuator -VAG1869/2-.
- Connect the connector for the brake pad wear indicator.
- Bleed the brake system. Refer to [S1.3 ystem, Bleeding](#), [page 132](#).
- Install the wheels



Note

- ◆ Before moving the vehicle, press the brake pedal firmly several times to seat the brake pads correctly in their operating position.
- ◆ Check brake fluid level.

Tightening Specifications

Component	Tightening Specification
Guide pin to brake carrier	30 Nm
Brake line to brake caliper	35 Nm



Component	Tightening Specification
Wheel bolt tightening specification	Refer to ⇒ Suspension, Wheels, Steering; Rep. Gr. 44; Wheel Bolt Tightening Specifications

2.2.2 Brake Caliper FN3

Special tools and workshop equipment required

- ◆ Torque Wrench 1331 5-50Nm -VAG1331-
- ◆ Brake Pedal Actuator -VAG1869/2-.

Removing

Work Procedure Applies Only For Replacing or When Performing Subsequent Service Work on Brake Caliper.

- Remove the wheels.
- Disconnect the connector from the brake pad wear display.
- Attach the bleeder bottle bleed hose to the brake caliper bleed valve.
- Open the bleeder valve.
- Install the Brake Pedal Actuator -VAG1869/2-.
- Close the bleed valve and remove the bleeder bottle.
- Remove the brake hose.
- Remove both caps from the brake caliper bearing bushings.
- Loosen both guide pins and remove from brake caliper.
- Remove the brake caliper from the brake carrier.
- Remove the brake pads from the brake caliper.

Installing

- Piston is pressed back.
- Outer brake pad sits on brake carrier.
- Insert inner brake pad with retaining spring in brake caliper (piston).

When installing brake caliper, make sure that brake pad is not affixed to brake caliper before the correct installation position has been reached.

Do not damage the adhesion surface.

- Tighten brake caliper to brake carrier using both guide pins.
- Install both protective caps.
- Screw brake hose on brake caliper.
- Remove the Brake Pedal Actuator -VAG1869/2-.
- Install retaining spring in brake caliper.
- Connect the connector for the brake pad wear indicator.
- Bleed the brake system. Refer to ⇒ S1.3 ystem, Bleeding, page 132.
- Install the wheels.



Note

- ◆ Before moving the vehicle, press the brake pedal firmly several times to seat the brake pads correctly in their operating position.
- ◆ Check brake fluid level.

Tightening Specifications

Component	Tightening Specification
Guide pin to brake carrier	30 Nm
Brake line to brake caliper	35 Nm
Wheel bolt tightening specification	Refer to ⇒ Suspension, Wheels, Steering; Rep. Gr. 44; Wheel Installation Tightening Specifications.

2.3 Rear Brake Pads

⇒ [P2.3.1 ads, Rear Brakes CII 41 TRW FWD", page 103](#)

⇒ [P2.3.2 ads, Rear Brakes CII 41 TRW AWD", page 105](#)

⇒ [P2.3.3 ads, Bosch Rear Brakes", page 108](#)

2.3.1 Brake Pads, Rear Brakes CII 41 TRW FWD

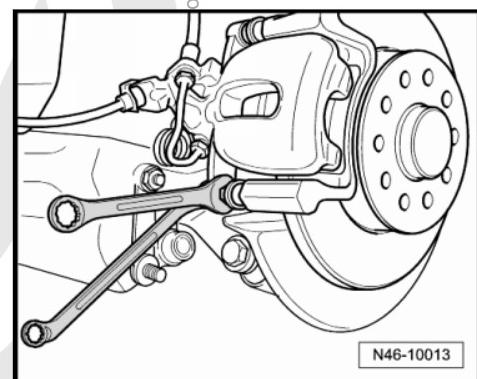
Special tools and workshop equipment required

- ◆ Torque Wrench 1331 5-50Nm-VAG1331-
- ◆ Brake Caliper Tool -T10165-

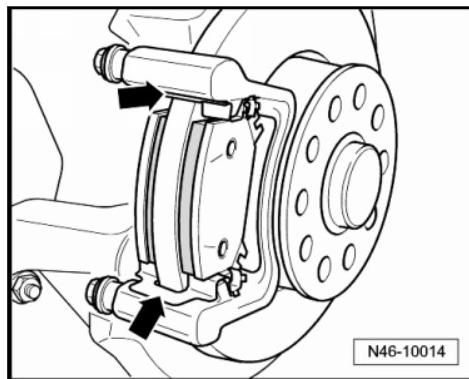
Removing

When Removing, Mark Brake Pads That Will Be Used Again.
Install in the Same Position, Otherwise Braking Effect Will Be Uneven.

- Remove the wheels.
- Counter-hold at the guide pin and remove the bolts from the brake caliper.



- Remove brake caliper and secure with wire so that the weight of the brake caliper does not burden or damage the brake hose.
- Remove the brake pads and brake pad retaining plates -arrows-.



Cleaning:



WARNING

Do not blow brake system using compressed air, the dust produced is harmful to health!

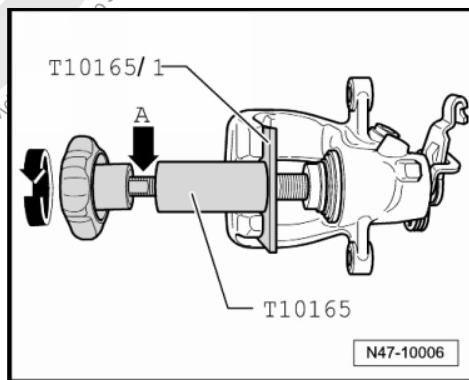
- Thoroughly clean the contact surface for the brake pad retaining plates (brake pads) on the brake carrier and remove any corrosion.
- Clean the brake caliper.

Use Only Appropriate Solvents for Cleaning Brake Caliper.

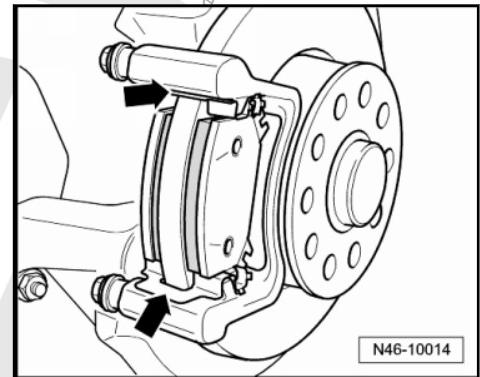
Installing

Before Pushing Back the Piston, Extract Some of the Brake Fluid Out of the Brake Fluid Reservoir Using a Bleeder Bottle. Otherwise, Especially If Reservoir Has Been Topped Off, Fluid Will Overflow and Cause Damage.

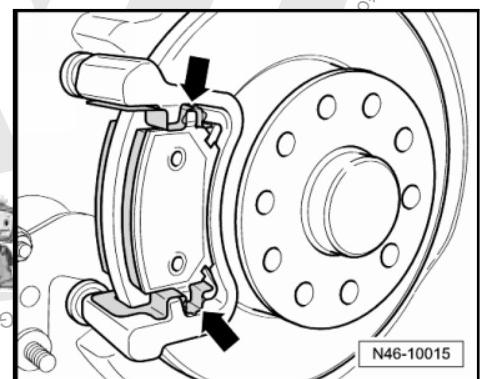
- Turn the thumbwheel on the Brake Caliper Tool - T10165- to the right to install the piston.
- Be careful not to damage the cap.
- Use the Resetting & Extracting Tool - Plate -T10165/1- to help you bolt it on.



- ◆ For pistons that are difficult to move, an open-end wrench (size 13 mm) can be applied at the appropriate wrench surface -arrow A-.
- Insert the brake pad retaining plates -arrows- and brake pads in brake carrier.



- Make sure the brake pads are seated in the brake pad retaining plates -arrows-



- Secure brake caliper using new self-locking bolts.
- ◆ The repair kit includes 4 self-locking hex bolts which must be installed in all cases.
- Install the wheels.



Note

- ◆ After replacing brake pads and before moving vehicle, always depress brake pedal several times firmly to properly seat brake pads in their normal operating position.
- ◆ Check brake fluid level after replacing brake pad.

Tightening Specifications

Component	Tightening Specification
Brake caliper to brake carrier ◆ Use new bolts.	35 Nm
Wheel bolt tightening specification	Refer to ⇒ Suspension, Wheels, Steering; Rep. Gr. 44; Wheel Installation Tightening Specifications.

2.3.2 Brake Pads, Rear Brakes CII 41 TRW AWD

Special tools and workshop equipment required

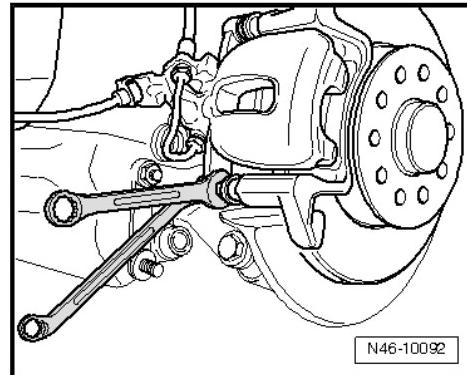
- ◆ Torque Wrench 1331 5-50Nm -VAG1331-
- ◆ Brake Caliper Tool -T10165-



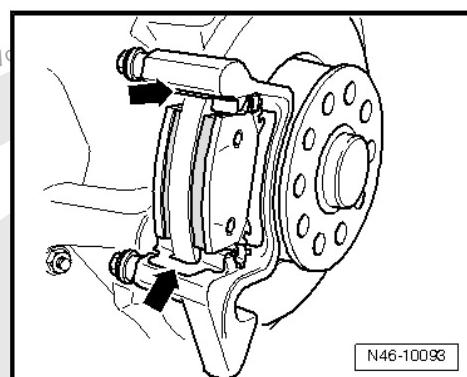
Removing

When Removing, Mark Brake Pads That Will Be Used Again.
Install in the Same Position, Otherwise Braking Effect Will Be Uneven.

- Remove the wheels.
- Counter-hold at the guide pin and remove the bolts from the brake caliper.



- Remove brake caliper and secure with wire so that the weight of the brake caliper does not burden or damage the brake hose.
- Remove the brake pads and brake pad retaining plates -arrows-.



Cleaning:



WARNING

Do not blow brake system using compressed air, the dust produced is harmful to health!

- Thoroughly clean the contact surface for the brake pad retaining plates (brake pads) on the brake carrier and remove any corrosion.
- Clean the brake caliper.

Use Only Appropriate Solvents for Cleaning Brake Caliper.

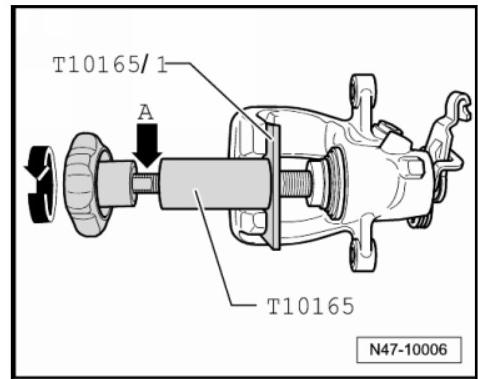
Installing

Before Pushing Back The Piston, Extract Some of the Brake Fluid Out of the Brake Fluid Reservoir Using a Bleeder Bottle.

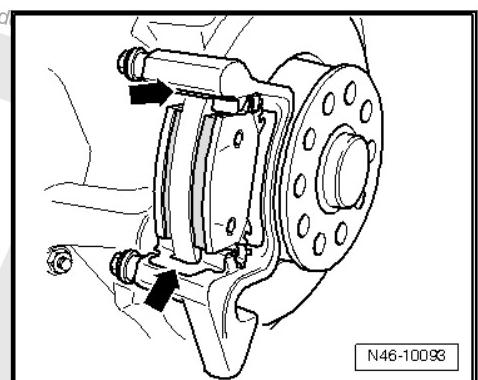


Otherwise, Especially If Reservoir has Been Topped Off, Fluid Will Overflow and Cause Damage.

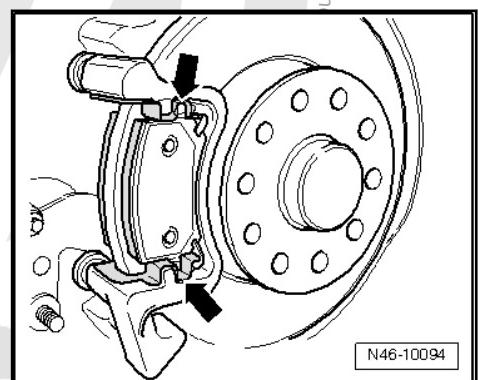
- Install the piston by turning to the right on the thumbwheel of the Brake Caliper Tool -T10165-.
- Be careful not to damage the cap.
- Use special tool T10165/1.



- ◆ For pistons that are difficult to move, an open-end wrench (size 13 mm) can be applied at the appropriate wrench surface -arrow A-.
- Insert the brake pad retaining plates -arrows- and brake pads in brake carrier.



- Make sure the brake pads are seated in the brake pad retaining plates -arrows-.



- Secure brake caliper using new self-locking bolts.
- ◆ The repair kit includes 4 self-locking hex bolts which must be installed in all cases.
- Install the wheels.



Note

- ◆ After replacing brake pads, depress brake pedal firmly several times with vehicle stationary so that the brake pads are properly seated in their normal operating position.
- ◆ Check brake fluid level after replacing brake pad.

Tightening Specifications

Component	Tightening Specification
Hex bolt, brake caliper to brake carrier ◆ Use new bolts.	35 Nm
Wheel bolt tightening specification	Refer to ⇒ Suspension, Wheels, Steering; Rep. Gr. 44; Wheel Bolt Tightening Specifications

2.3.3 Brake Pads, Bosch Rear Brakes

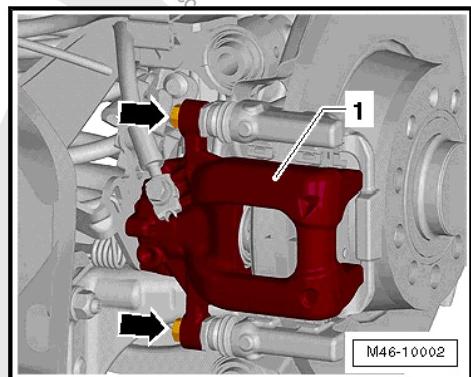
Special tools and workshop equipment required

- ◆ Torque Wrench 1331 5-50Nm -VAG1331-
- ◆ Brake Caliper Tool -T10165-

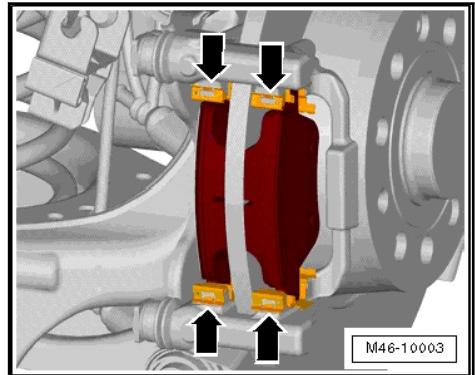
Removing

**When Removing, Mark Brake Pads that Will Be Used Again.
Install in the Same Position, Otherwise Braking Effect will be Uneven.**

- Raise the vehicle.
- Remove the rear wheels.
- Counterhold the guide bolt and remove the bolts -arrows- from the brake caliper -1-.



- Remove brake caliper and secure with wire so that the weight of the brake caliper does not burden or damage the brake hose.
- Remove the brake pads and brake pad retaining plates -arrows-.



Cleaning:



WARNING

Do not blow brake system using compressed air, the dust produced is harmful to health!

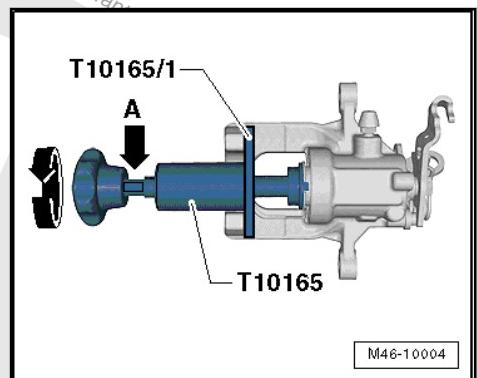
- Contact surfaces between brake pad retaining plates (brake pads) and brake carrier must be cleaned and remove any corrosion.
 - Clean the brake caliper.

Use Only Appropriate Solvents for Cleaning Brake Caliper.

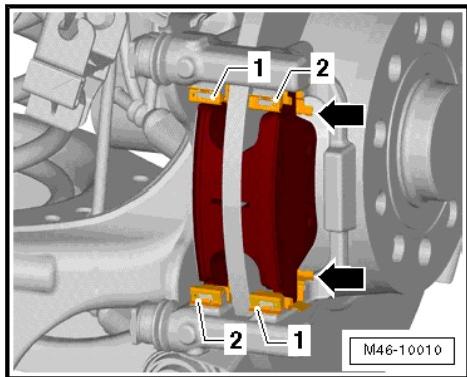
Installing

Before Pushing Back The Piston, Extract Some of the Brake Fluid Out of the Brake Fluid Reservoir Using a Bleeder Bottle. Otherwise, Especially if Reservoir Has Been Topped Off, Fluid Will Overflow and Cause Damage.

- Install the piston by turning to the right on the thumbwheel of the Brake Caliper Tool -T10165-. Be careful not to damage the cap.



- Use the Resetting & Extracting Tool - Plate -T10165/1- to help you bolt it on.
 - ◆ Insert the Brake Caliper Tool -T10165- so that the collar touches the Plate -T10145/1-.
 - ◆ For pistons that are difficult to move, an open-end wrench (size 13 mm) can be applied at the appropriate wrench surface -arrow A-.
 - Insert the brake pad retaining plates -1- and -2- in the brake carrier.

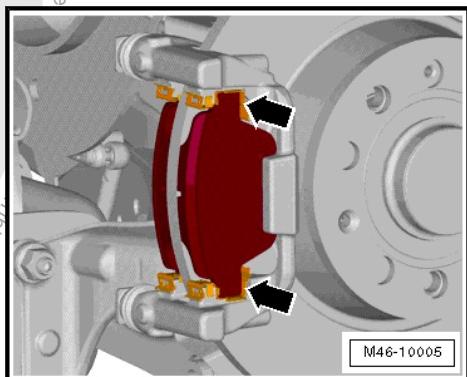


Note

The brake pad retaining plates -1- and -2- are different, they can only be installed diagonally to each other.

Install the brake pad retaining plates -1- and -2- so that the guides -arrows- on both sides of the brake carrier face out.

- Insert brake pads in brake carrier.
- Make sure the brake pads are seated in the brake pad retaining plates -arrows-.



- Secure brake caliper using new self-locking bolts.
- Install the wheels.



Note

- ◆ The repair kit has 4 self-locking screws for installing the brake caliper. Always use these.
- ◆ After replacing brake pads, depress brake pedal firmly several times with vehicle stationary so that the brake pads are properly seated in their normal operating position.
- ◆ Check brake fluid level after replacing brake pad.

Tightening Specification

Component	Tightening Specification
Brake caliper to brake carrier	35 Nm
Wheel bolt tightening specification	Refer to ⇒ Suspension, Wheels, Steering; Rep. Gr. 44; Wheel Bolt Tightening Specifications



2.4 Rear Brake Caliper

- ⇒ [C2.4.1 aliper, CII 41 TRW FWD", page 111](#)
- ⇒ [C2.4.2 aliper, CII 41 TRW AWD", page 112](#)
- ⇒ [C2.4.3 aliper, Bosch Rear Brakes", page 114](#)

2.4.1 Brake Caliper, CII 41 TRW FWD

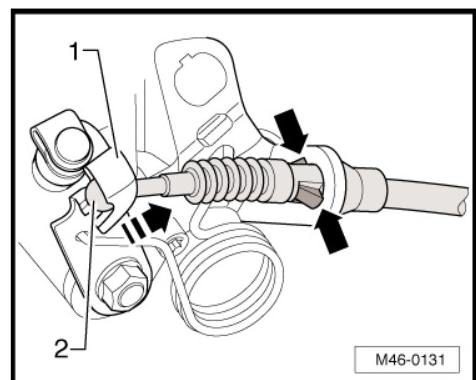
Special tools and workshop equipment required

- ◆ Torque Wrench 1331 5-50Nm -VAG1331-
- ◆ Brake Pedal Actuator -VAG1869/2-.

Removing

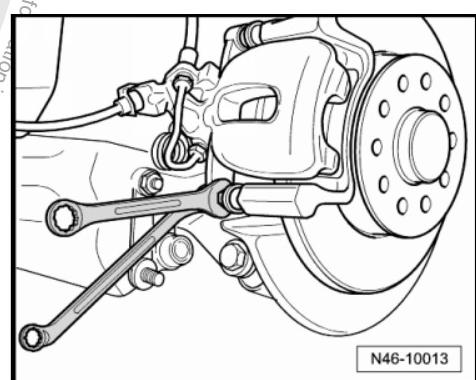
Work Procedure Applies Only For Replacing or When Performing Subsequent Service Work on Brake Caliper.

- Remove the wheel.
- Push the lever on the brake caliper -1- in the direction of -arrow- and disengage the parking brake cable -2-.



M46-0131

- Push the retaining tabs -arrows- inward and remove the brake cable.
- Attach the bleeder bottle bleed hose to the brake caliper bleed valve.
- Open the bleeder valve.
- Install the Brake Pedal Actuator -VAG1869/2-.
- Close the bleed valve and remove the bleeder bottle.
- Remove the brake line.
- Counterhold the guide pins and remove both screws from the brake caliper.
- Remove the brake caliper from the brake carrier.



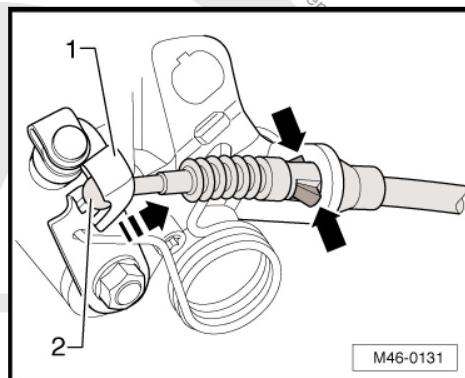
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Installing

- Piston is pressed back.
- Brake pads sit in retaining springs on the brake carrier.
- Secure brake caliper on brake carrier using new self-locking bolts.
- Connect the brake line to the brake caliper.
- Bleed the brake system. Refer to [⇒ S1.3 System, Bleeding](#), page 132 .
- Slide the parking brake cable into the bracket on the brake caliper until the retaining tabs -arrows- engage.



- Push the lever on the brake caliper -1- in the direction of -arrow- and engage the parking brake cable -2-.
- Adjust parking brake. Refer to [⇒ B1.4.1 Rake, Adjusting, Through 12/06/2009](#), page 89 .
- Install the wheel.



Note

- ◆ Before moving the vehicle, press the brake pedal firmly several times to seat the brake pads correctly in their operating position.
- ◆ Check brake fluid level.

Tightening Specifications

Component	Tightening Specification
Hex bolt, brake caliper to brake carrier ◆ Use new bolts.	35 Nm
Brake line to brake caliper	14 Nm
Wheel bolt tightening specification	Refer to ⇒ Suspension, Wheels, Steering; Rep. Gr. 44; Wheel Installation Tightening Specifications.

2.4.2 Brake Caliper, CII 41 TRW AWD

Special tools and workshop equipment required

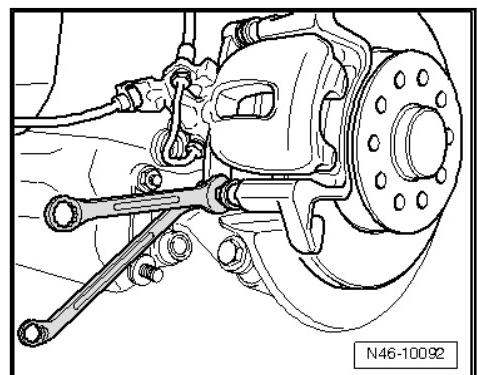
- ◆ Torque Wrench 1331 5-50Nm -VAG1331-
- ◆ Brake Pedal Actuator -VAG1869/2-.



Removing

Work Procedure Applies Only for Replacing or When Performing Subsequent Service Work on Brake Caliper.

- Remove the wheels.
- Disengage the parking brake cable from the lever on the brake caliper.
- Remove the spring clip and pull the parking brake cable out of the bracket on the brake caliper.
- Attach the bleeder bottle bleed hose to the brake caliper bleed valve.
- Open the bleeder valve.
- Install the Brake Pedal Actuator -VAG1869/2-.
- Close the bleed valve and remove the bleeder bottle.
- Remove the brake line.
- Counterhold the guide pins and remove both screws from the brake caliper.
- Remove the brake caliper from the brake carrier.



Installing

- Piston is pressed back.
- Brake pads sit in retaining springs on the brake carrier.
- Secure brake caliper on brake carrier using new self-locking bolts.
- Connect the brake line to the brake caliper.
- Bleed the brake system. Refer to [S1.3 ystem, Bleeding](#), [page 132](#).
- Hook in the brake cable and secure it to the holder with the spring clip.
- Adjusting the parking brake. Refer to [B1.4.1 rake, Adjusting, Through 12/06/2009](#), [page 89](#).
- Install the wheels.



Note

- ◆ Before moving the vehicle, press the brake pedal firmly several times to seat the brake pads correctly in their operating position.
- ◆ Check brake fluid level.



Tightening Specifications

Component	Tightening Specification
Hex bolt, brake caliper to brake carrier ◆ Use new bolts.	35 Nm
Brake line to brake caliper	14 Nm
Wheel bolt tightening specification	Refer to ⇒ Suspension, Wheels, Steering; Rep. Gr. 44; Wheel Bolt Tightening Specifications

2.4.3 Brake Caliper, Bosch Rear Brakes

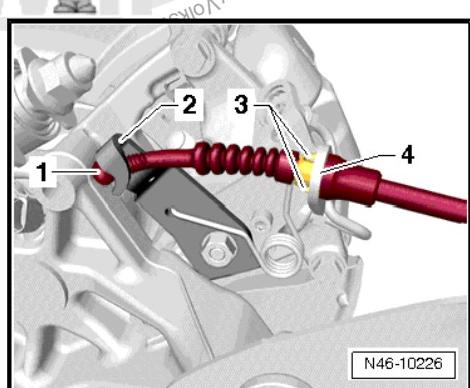
Special tools and workshop equipment required

- ◆ Torque Wrench 1331 5-50Nm -VAG1331-
- ◆ Brake Pedal Actuator -VAG1869/2-.

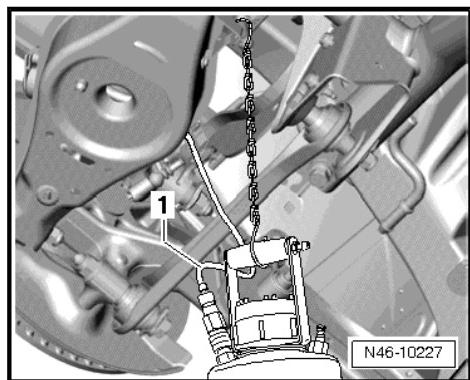
Removing

Work Procedure Applies Only for Replacing or When Performing Subsequent Service Work on Brake Caliper.

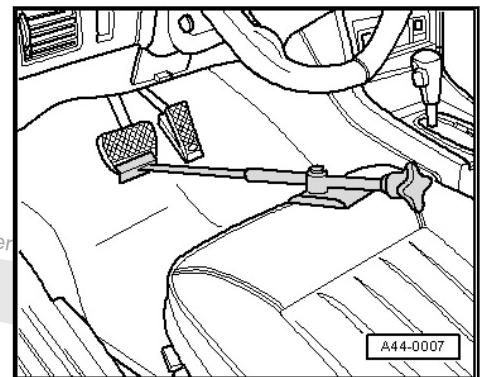
- Raise the vehicle.
- Remove the rear wheels.
- Disengage the parking brake cable -1- from the lever on the brake caliper -2-.



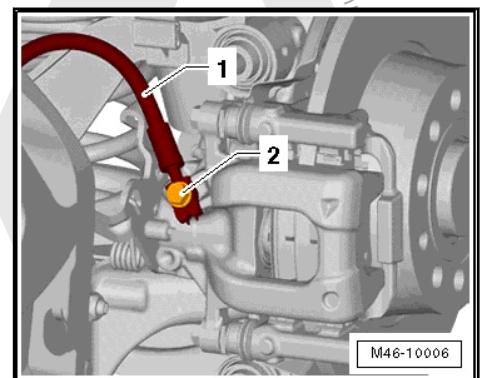
- Squeeze the tabs -3- and remove the parking brake cable from the bracket -4- on the brake caliper.
- Connect the bleed hose -1- from the bleeder bottle to the brake caliper bleed valve and open the bleed valve.



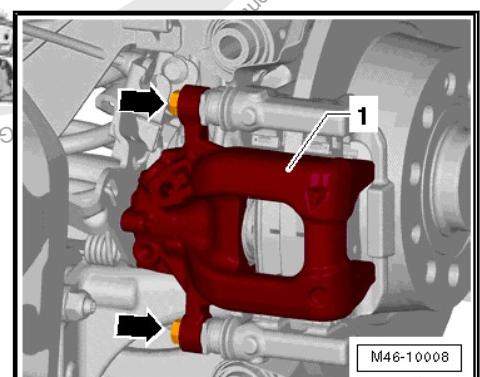
- Install the Brake Pedal Actuator -VAG1869/2-.



- Close the bleed valve and remove the bleeder bottle.
- Remove the brake hose connection -1- and the banjo bolt -2- from the brake caliper.



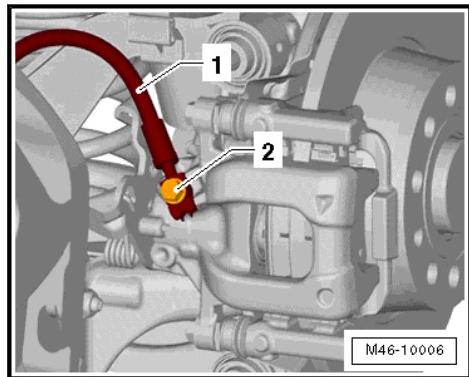
- Counterhold the guide bolt and remove the bolts -arrows- from the brake caliper -1-.



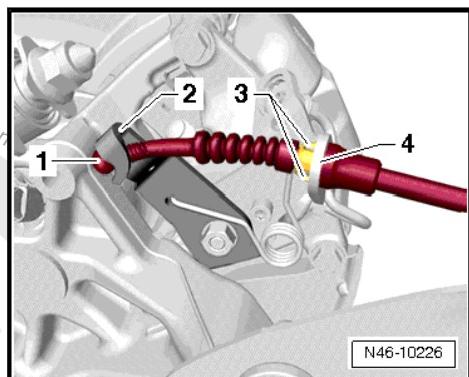
- Remove the brake caliper from the brake carrier.

Installing

- Piston is pressed back.
- Brake pads sit in retaining springs on the brake carrier.
- Secure brake caliper on brake carrier using new self-locking bolts.
- Attach the brake hose -1- and banjo bolt -2- to the brake caliper.



- Guide the parking brake cable through the bracket -4- on the brake caliper until the tabs -3- engage.



- Engage the parking brake cable -1- in the lever -2- on the brake caliper.
- Bleed the brake system. Refer to ⇒ [S1.3 ystem, Bleeding](#), [page 132](#).
- Adjust parking brake. Refer to ⇒ [B1.4.2 rake, Adjusting](#), [From 12/06/2009](#), [page 90](#).
- Install the wheels.



Note

- ◆ Before moving the vehicle, press the brake pedal firmly several times to seat the brake pads correctly in their operating position.
- ◆ Check brake fluid level.

Tightening Specifications

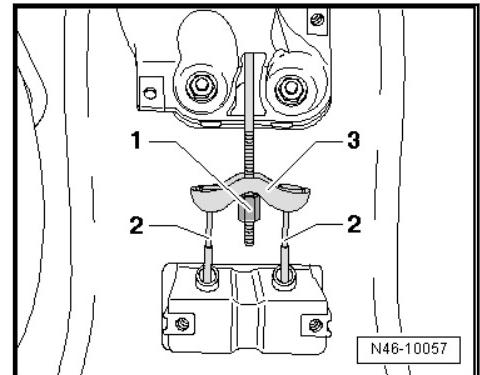
Component	Tightening Specification
Brake caliper to brake carrier ◆ Use new bolts.	35 Nm
Brake hose with banjo bolt on the brake caliper	35 Nm
Wheel bolt tightening specification	Refer to ⇒ Suspension, Wheels, Steering; Rep. Gr. 44; Wheel Bolt Tightening Specifications



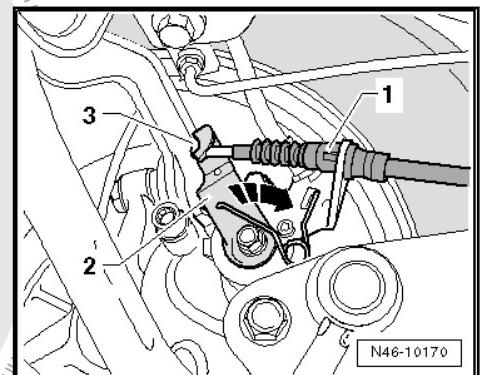
2.5 Parking Brake Cable

Removing

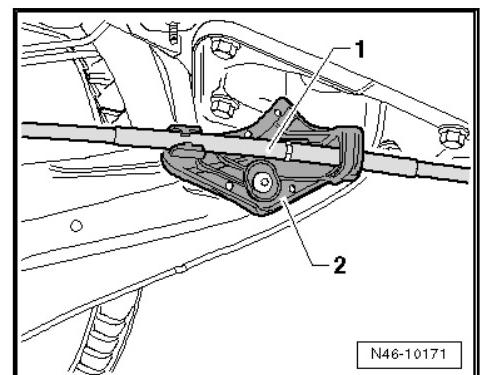
- Release parking brake.
- Remove the center console. Refer to ⇒ Body Interior; Rep. Gr. 68; Storage Compartments, Covers and Trim.
- Loosen the adjusting nut -1- until the respective parking brake cable -2- can be disengaged from the compensator bracket -3-.



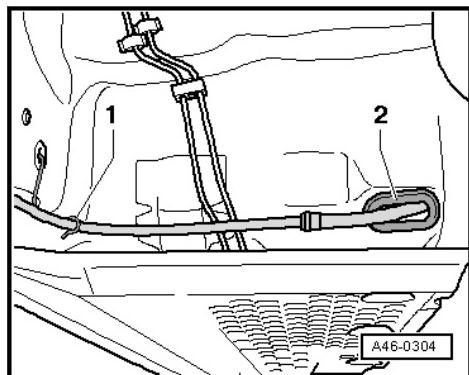
- Push the lever on the brake caliper -2- in the direction of the arrow and disengage the parking brake cable -3-.



- Press the retaining tabs -1- together and pull the parking brake cable out of the bracket on the brake caliper.
- First unclip the parking brake cable -1- from the mounts.



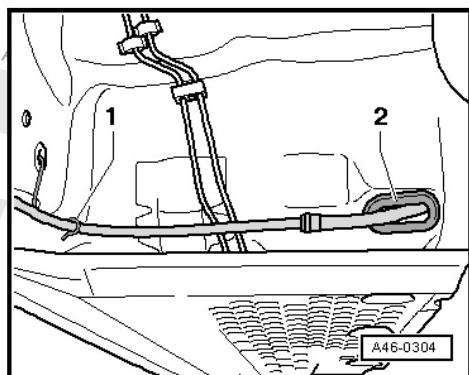
- Then completely pull it out of the bracket -2-.
- Disengage the parking brake cable from the bracket -1-.



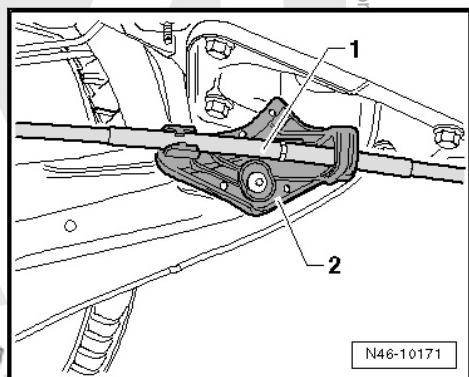
- Pull the parking brake cable out of the guide tube -2-.

Installing

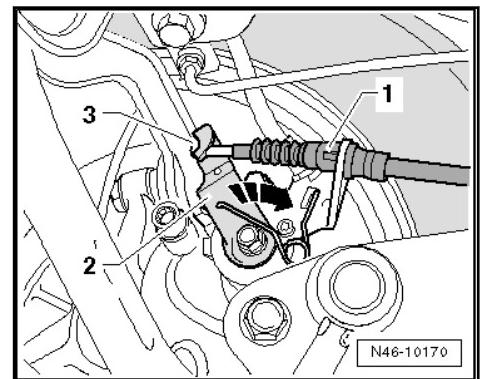
- Slide the parking brake cable into the guide tube -2- and engage it in the bracket -1-.



- Insert the parking brake cable -1- through the opening and then clip it onto the bracket -2-.



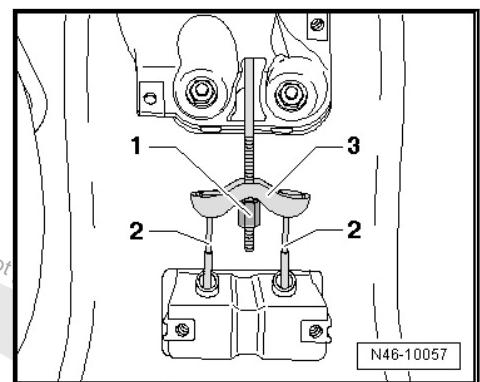
- Press the parking brake cable through the bracket on the brake caliper until both retaining tabs -1- engage.



- Push the lever on the brake caliper -2- in direction of arrow.
- Engage the parking brake cable -3-.

The parking brake cable must be installed without tension between the bracket on the brake caliper and the bracket on the trailing arm.

- Engage the parking brake cable -2- in the compensator bracket -3-.

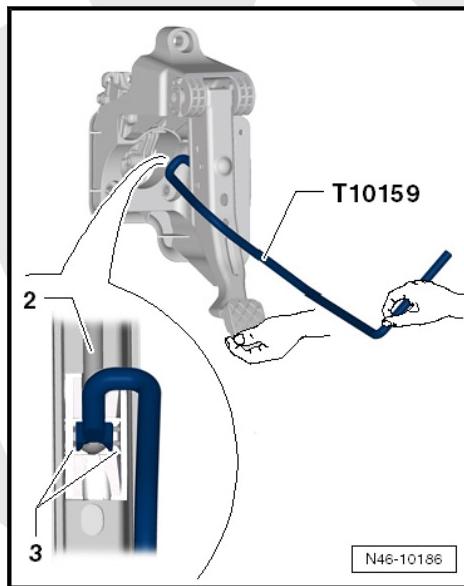


- Pretension the parking brake cable using the adjusting nut -1-.
- Adjust the parking brake. Refer to [B1.4.1 Rake, Adjusting, Through 12/06/2009](#), page 89 .

2.6 Brake Pedal, Removing from Brake Booster

Special tools and workshop equipment required

- ◆ Release Tool - Brake Servo -T10159-/Brake Servo Release Tool - T10159A-
- Remove trim on driver side. Refer to ⇒ Body - Interior; Rep. Gr. 70; Instrument panel.
- First press brake pedal in direction of brake booster and hold.



2 - Pressure rod

3 - Retaining tabs

- Insert the Brake Servo Release Tool -T10159A- and pull in the direction of the driver seat. When doing this, counter-hold at the brake pedal (the pedal must not be allowed to move backward at this time). The mount retaining tabs -3- will thereby be pressed off the ball head of the push rod -2-.

The process of separating the brake pedal from the brake booster is shown with the pedal assembly removed.

- Pull the Brake Servo Release Tool -T10159A- and brake pedal together toward the driver seat (as a result, the brake pedal is removed from the pushrod ball head).

2.7 Brake Pedal, Attaching to Brake Booster

- Hold the push rod ball head in front of the mount and push the brake pedal toward the brake booster until the ball head engages audibly.



- Check the lock by pulling on the brake pedal.

Install in reverse order of removal.



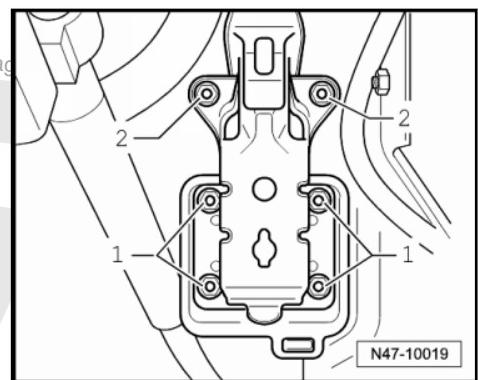
2.8 Mounting Bracket

⇒ [B2.8.1 racket", page 121](#)

2.8.1 Mounting Bracket

Removing

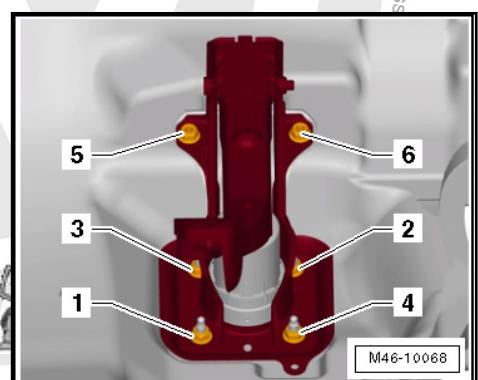
- Remove the knee airbag from the bracket. Refer to ⇒ Body Interior; Rep. Gr. 69; Airbag; Knee Airbag, Removing and Installing.
- Remove the footwell vent. Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 80; Heater, Servicing; Vents, Removing.
- Remove the knee airbag bracket. Refer to ⇒ Body Interior; Rep. Gr. 69; Airbag; Mount, Knee Airbag, Removing and Installing.
- If equipped, remove the crash bolsters -2-. Refer to ⇒ Suspension, Wheels, Steering; Rep. Gr. 48; Overview - Steering Column.
- Remove the noise insulation on the brake pedal, if applicable -item 3- ⇒ [Item 3 \(page 92\)](#) .
- Disconnect brake pedal from brake booster. Refer to ⇒ [P2.6 edal, Removing from Brake Booster", page 119](#) .
- Remove the nuts -1- and -2- and then remove the bracket.



Installing

Installation is the reverse of removal, with special attention to the following:

Follow the tightening sequence:



- Tighten bolts -1- through -6- in the same sequence as illustrated.



- Clip the brake pedal to the brake booster. Refer to [P2.7 Pedal, Attaching to Brake Booster](#), page 120 .

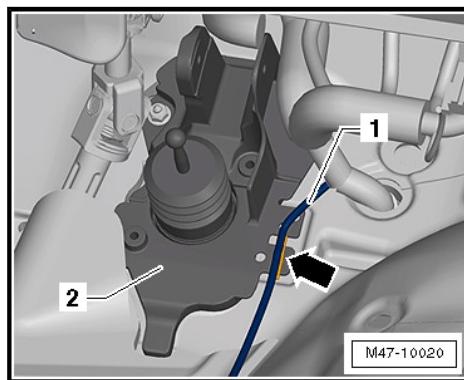
Tightening Specification

Component	Tightening Specification
Bracket to brake booster and bulkhead ♦ Use new bolts.	25 Nm
Crash bolsters	Refer to ⇒ Suspension, Wheels, Steering; Rep. Gr. 48; Overview - Steering Column.

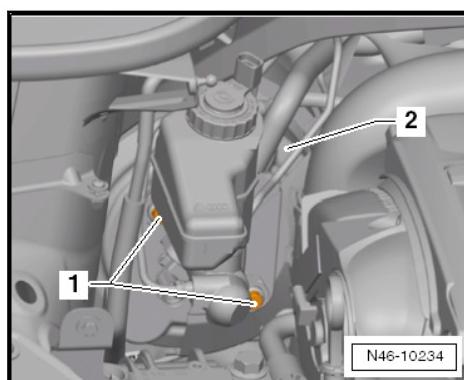
2.8.2 Mounting Bracket, Removing and Installing, RHD

Removing

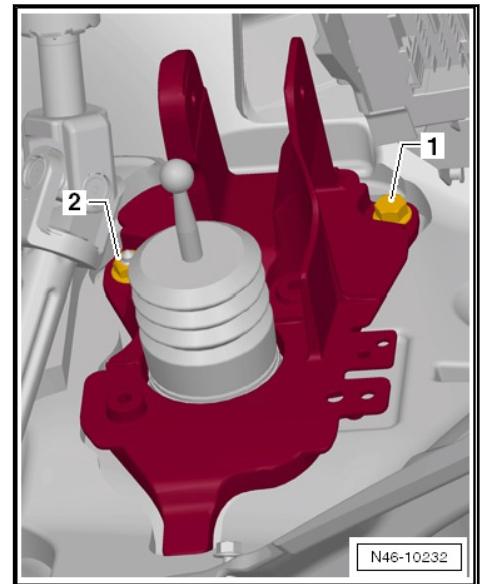
- Remove the brake pedal. Refer to [P2.9.2 Pedal, Removing and Installing, RHD Vehicle](#), page 124 .
- Remove wiring harness -1- on mounting bracket -2-.



- To do this, unclip wiring harness -1- -arrow-.
- Remove the screws -1- from the brake booster -2-.



- Remove the right screw -1- above the brake pedal mount.



N46-10232

- Remove the left nut -2- above the brake pedal mount.
- Remove the bracket.

Installing

Installation is the reverse of removal, with special attention to the following:

- Clip the brake pedal together with the brake booster. Refer to [P2.7 edal, Attaching to Brake Booster](#), page 120 .

Tightening specification

Component	Tightening Specifications	
Brake booster to the bracket / bulkhead ◆ Use new bolts.	25 Nm	
Bracket to the bulk-head ◆ Use new nuts and screws!	25 Nm	
Crash bolster	Refer to Suspension, Wheels, Steering; Rep. Gr. 48; Overview - Steering Column .	
Bracket for knee air-bag	Refer to Body Interior; Rep. Gr. 69; Airbag; Knee Airbag Bracket, Removing and Installing .	
Knee airbag	Refer to Body Interior; Rep. Gr. 69; Knee Airbag, Removing and Installing .	
Air Guide	Refer to Heating, Ventilation and Air Conditioning; Rep. Gr. 80; Heater, Servicing; Vents, Removing .	



2.9 Brake Pedal

⇒ [P2.9.1 edal", page 124](#)

2.9.1 Brake Pedal

Removing

- Remove the knee airbag from the bracket. Refer to ⇒ Body Interior; Rep. Gr. 69; Knee Airbag, Removing and Installing.
- Remove the footwell vent. Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 80; Heater, Servicing; Vents, Removing.
- Remove the knee airbag bracket. Refer to ⇒ Body Interior; Rep. Gr. 69; Airbag; Mount, Knee Airbag, Removing and Installing.
- Remove the noise insulation on the brake pedal, if applicable -item 3- [⇒ Item 3 \(page 92\)](#).
- Disconnect brake pedal from brake booster. Refer to ⇒ [P2.6 edal, Removing from Brake Booster", page 119](#).
- Remove the brake pedal.

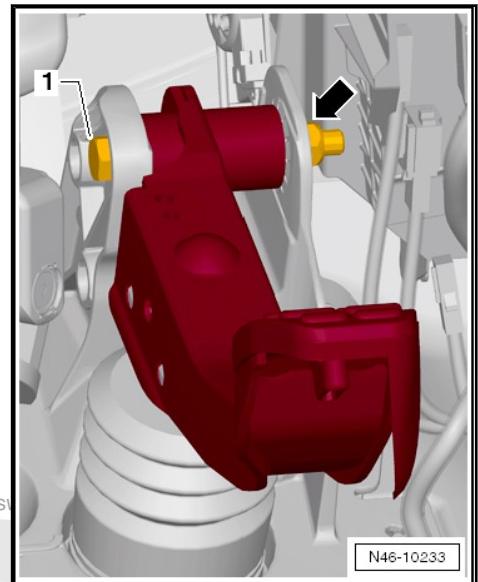
Installing

- Install in reverse order of removal.

2.9.2 Brake Pedal, Removing and Installing, RHD Vehicle

Removing

- If equipped, remove the knee airbag. Refer to ⇒ Body Interior; Rep. Gr. 69; Knee Airbag, Removing and Installing.
- Remove the footwell vent. Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 80; Heater, Servicing; Vents, Removing.
- If equipped, remove the bracket for the knee airbag. Refer to ⇒ Body Interior; Rep. Gr. 69; Airbag; Knee Airbag Bracket, Removing and Installing.
- If equipped, remove the crash bolsters. Refer to ⇒ Suspension, Wheels, Steering; Rep. Gr. 48; Overview Steering Column.
- Remove the noise insulation on the brake pedal, if applicable .
- Disconnect brake pedal from brake booster. Refer to ⇒ [P2.6 edal, Removing from Brake Booster", page 119](#).
- Remove bolt -1- for brake pedal to the left.



- While doing so, counterhold at the nut-arrow-.

- Remove brake pedal.

Installing

Installation is the reverse of removal, with special attention to the following:

- Clip the brake pedal together with the brake booster. Refer to [⇒ P2.7 edal, Attaching to Brake Booster](#), page 120 .

Tightening specification

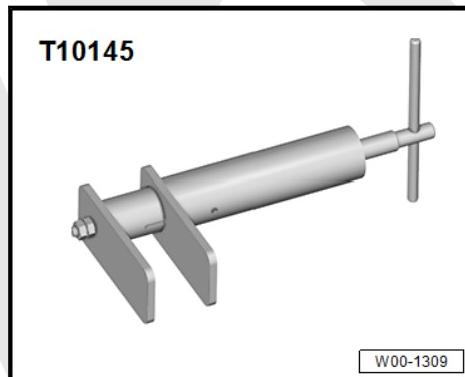
Component	Tightening specification
Brake pedal to mounting bracket ◆ Use a new nut!	25 Nm
Crash bolster	Refer to ⇒ Suspension, Wheels, Steering; Rep. Gr. 48; Overview - Steering Column.
Bracket for knee airbag	Refer to ⇒ Body Interior; Rep. Gr. 69; Airbag; Knee Airbag Bracket, Removing and Installing.
Knee airbag	Refer to ⇒ Body Interior; Rep. Gr. 69; Knee Airbag, Removing and Installing.
Air Guide	Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 80; Heater, Servicing; Vents, Removing.



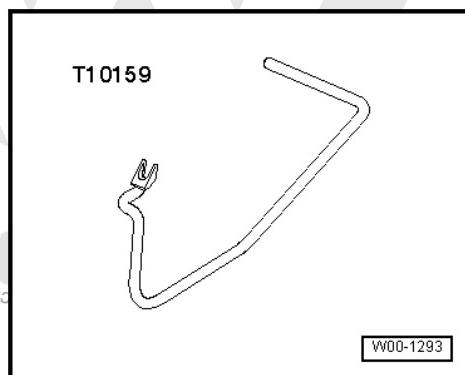
3 Special Tools

Special tools and workshop equipment required

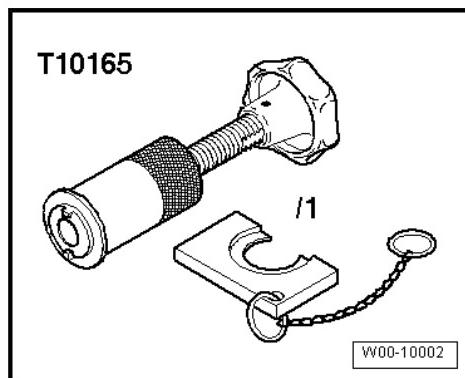
- ◆ Piston Resetting Tool -T10145-



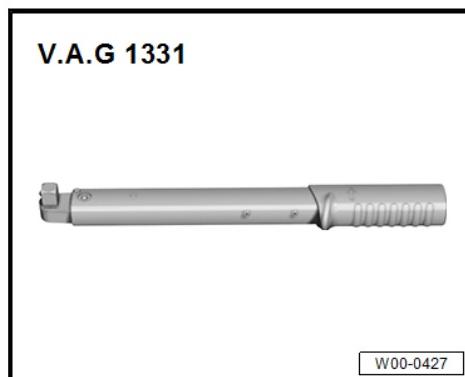
- ◆ Release Tool - Brake Servo -T10159-/Brake Servo Release Tool - T10159A-



- ◆ Brake Caliper Tool -T10165-



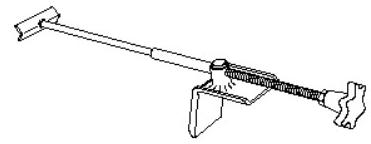
- ◆ Torque Wrench 1331 5-50Nm -VAG1331-





◆ Brake Pedal Actuator -VAG1869/2-

V.A.G 1869/2



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47 – Hydraulic Components

1 General Information

⇒ [L1.1 ines, Repairing", page 128](#)

⇒ [L1.2 ine Instructions", page 129](#)

⇒ [S1.3 ystem, Bleeding", page 132](#)

⇒ [1.4 , page 132](#)

⇒ [N1.5 ormal", page 133](#)

⇒ [1.6 , page 133](#)

1.1 Brake Lines, Repairing

Flare brake lines using Brake Line Tool Kit -VAS6056- to 5 mm outer diameter without damaging coating. In this way, brake lines can be inexpensively partially replaced in certain cases.

Working with Brake Line Kit -VAS6056- is not permitted because of the coating and diameter of black brake lines.

Note

- ◆ *Do not bend the brake lines more than maximum 90°.*
- ◆ *Otherwise the brake lines kink or deform causes unacceptable constriction in the line.*
- ◆ *Disconnect brake lines preferably at underbody.*
- ◆ *Position of intermediate pieces should be selected so that they cannot rub against moving parts.*
- ◆ *Do not lubricate spindle, clean only with mineral spirits.*

Special tools and workshop equipment required

- ◆ Brake Line Tool Kit -VAS6056-
- ◆ Brake Charger/Bleeder Unit -VAS5234-

Individual Tool Listing of the Brake Line Tool Kit -VAS6056-:



**1 - Brake Line Tool Kit -
Flanging Tool -VAS6056/1-**

- The Brake Line Tool Kit -VAS6056/4- are installed in the Brake Line Tool Kit - Flanging Tool - VAS6056/1-.

**2 - Brake Line Tool Kit - Pipe
Cutter -VAS6056/2-**

**3 - Brake Line Tool Kit - Brake
Line Scraper -VAS6056/3-**

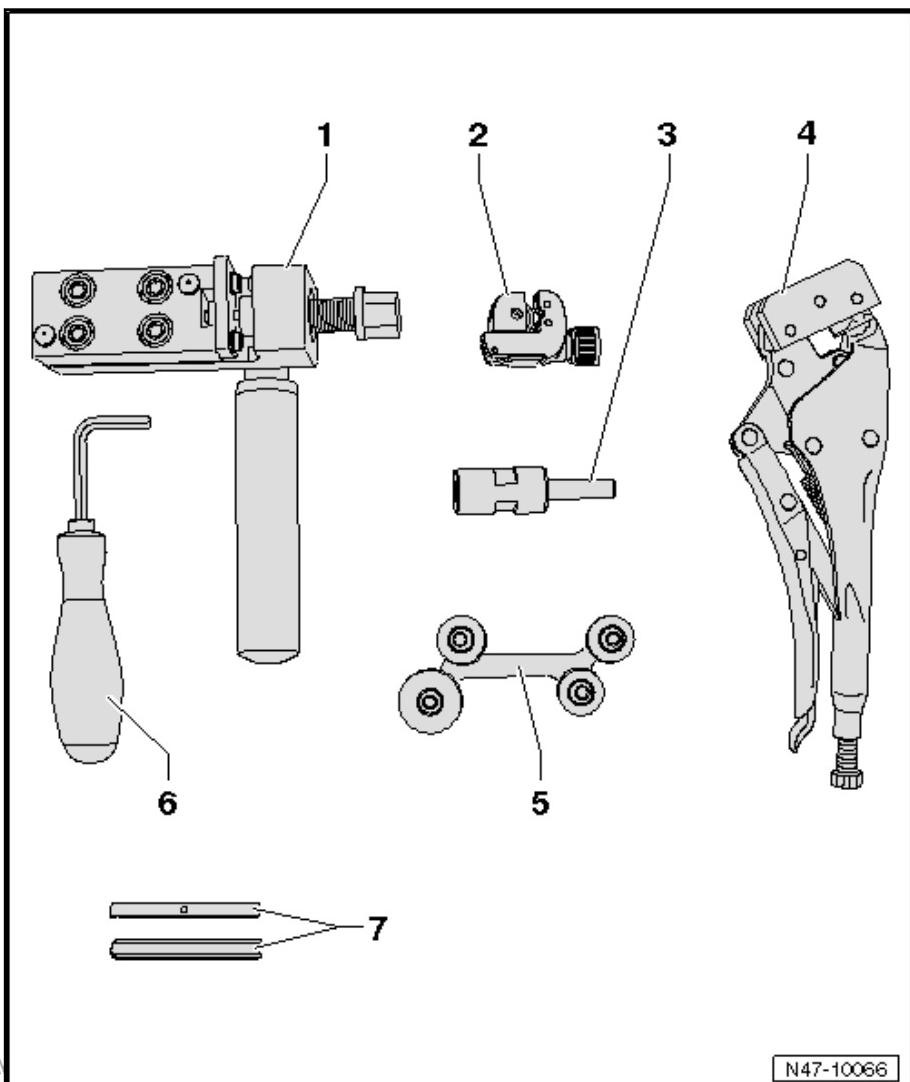
- The threaded pins (in shaft and at sides) are set and must not be adjusted!

**4 - Brake Line Tool Kit - Line
Grips -VAS6056/4-**

**5 - Brake Line Tool Kit - Pipe
Bending Tool -VAS6056/5-**

6 - SW6 Angle Screwdriver

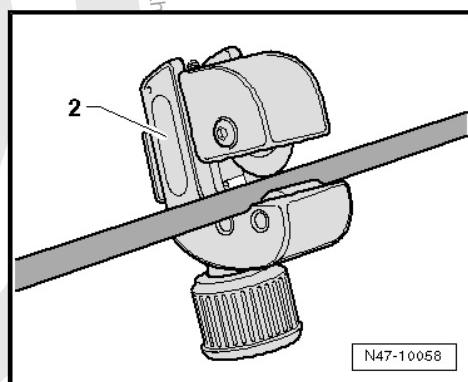
**7 - Brake Line Tool Kit - Set
Of Clamp Jaws -VAS6056/7-**



N47-10066

1.2 Brake Line Instructions

- Remove the corresponding brake line on the brake caliper or wheel brake cylinder.
- Be sure to catch any leaking brake fluid and dispose of it correctly.
- Cut the brake line at a suitable place (straight, easily accessible piece) with the tube cutter -2-.

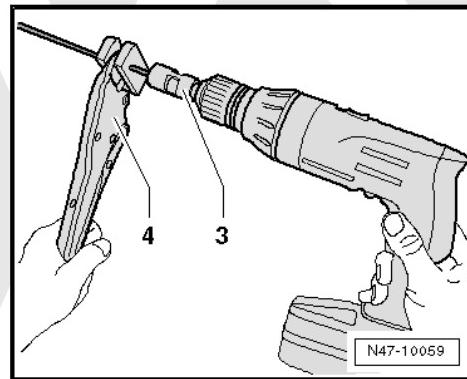


N47-10058

- Remove the piece to be exchanged.



- Lubricate brake line surface.
- Hold the brake line firmly in a set of locking pliers -4- so that 50 mm is sticking out of the plastic jaws.

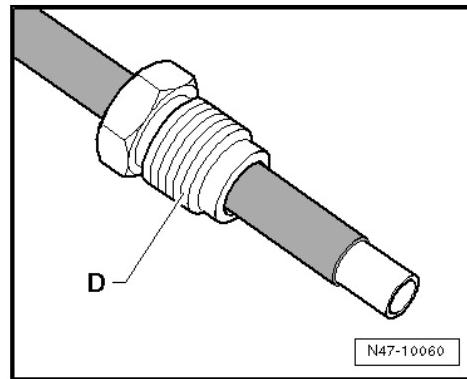


- Tension the brake line scraper -3- in a drill and place it on the brake line.
- Shear the coating from the brake line at a slow drill RPM and with light pressure against the line.

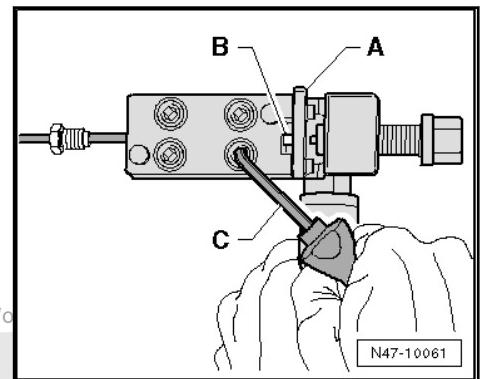
 **Note**

The length of the sheared-off portion is determined by the stop in the shearing tool.

- Remove the brake line scraper from the brake line.
- Remove any shavings.
- Remove the locking pliers and push the tube fitting -D- onto the brake line.



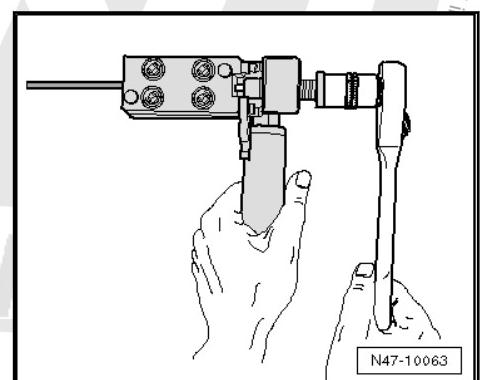
- Push the brake line -B- against the stop -A- inside the flaring tool.



 Note

Brake line must contact stop when hex socket heat screws are tightened, otherwise the flanged head will not be formed correctly.

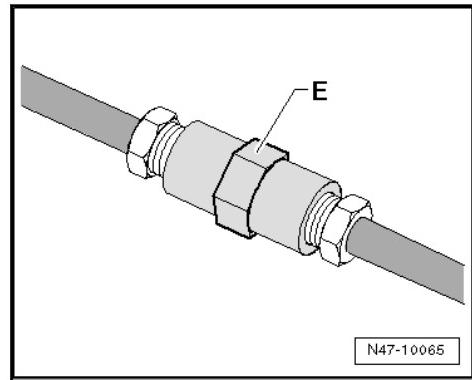
- Pretension the brake line in the flanging tool until the brake line can no longer be moved.
- Fold up the stop -A-.
- Tighten the hex socket head bolts diagonally using a long reach special wrench -C-.
- Turn the spindle all the way in the flange unit.



- Turn the spindle back.
- Loosen the hex socket head bolts diagonally.
- Remove the brake line from the flanging tool.
- Clean the brake line.
- Check the brake line and the flanged head.

Briefly rinse the part of the brake line remaining in the vehicle:

- Connect the Brake Charger/Bleeder Unit -VAS5234-, place the bleeder container hose on the flared head of the brake line and run the Brake Charger/Bleeder Unit -VAS5234- briefly until some brake fluid runs through.
- Clean the brake line with compressed air.
- Join brake lines with connecting piece -E-.



- Install the brake line.
- Bleed the brake system. Refer to [S1.3 System, Bleeding](#), page 132 .

1.3 Brake System, Bleeding

The Bleeding of Brake System is Described Using the Brake Charger/Bleeder Unit -VAS5234- and the Brake Charge and Bleed Equipment Brake Pedal Actuator -VAG1869-.

Note

- ◆ Bleeding the braking system on vehicles with ABS is carried out as for vehicles with conventional braking systems.
- ◆ Only use new brake fluid conforming to US-Norm FMVSS 116 DOT 4.
- ◆ Genuine VW/Audi brake fluid conforms to this specification.
- ◆ Brake fluid is poisonous. Due to its caustic nature, it must also never be brought into contact with paint.
- ◆ Brake fluid is hygroscopic, meaning that it absorbs moisture from the surrounding air, and must therefore be stored in air-tight containers.
- ◆ Wash off any spilled brake fluid with plenty of water.

There Must Be a Positive Pressure of 2 Bar (29 psi) to Bleed the Hydraulic Unit.

Special tools and workshop equipment required

- ◆ Brake Charger/Bleeder Unit -VAS5234-
- ◆ Bleeder Bottle
- ◆ Brake Bleeding Tool Set -VAS6564-

Note

If one chamber of the brake fluid reservoir runs completely empty, it must be pre-bled. Refer to [1.4](#), page 132 .

1.4 Pre-Bleeding

- Connect the Brake Charger/Bleeder Unit -VAS5234-

Bleeding sequence:

- 1 - Bleed the left front and right front brake calipers simultaneously



2 - Bleed left rear and right rear brake caliper together simultaneously

- With bleeder bottle hoses attached, leave bleeder valves open long enough that brake fluid exits without bubbles.

Then the hydraulic unit must be bled once more via the "Basic setting" function see Vehicle Diagnostic Tester "Guided Fault Finding" function.

Initiate basic setting (to bleed the brake system):

- Connect the -Vehicle Diagnostic Tester- and select the function. Refer to [D1.3 iagnostic Tester](#), page 11 .
- Then the brake system must be bled normally. Refer to [N1.5 ormal](#), page 133 .

1.5 Bleeding, Normal

Adhere Strictly to Work Sequence When Bleeding Brake System.

- Connect the Brake Charger/Bleeder Unit VAS5234-
- Open the bleeder valves in the specified sequence and bleed the brake calipers.
1 - Front left brake caliper
2 - Right front brake caliper
3 - Left rear brake caliper
4 - Right rear brake caliper

Use Suitable Bleeder Hose. It must fit Tightly On Bleeder Valve So That No Air Gets Into Brake System.

- With bleeder bottle hose attached, leave bleeder valve open long enough that brake fluid exits without bubbles.

1.6 Post-Bleeding

A second mechanic is required to assist:

- Press the brake pedal forcefully and hold.
- Open bleeder valve at brake caliper.
- Press brake pedal down onto stop.
- Close bleeder valve with pedal depressed.
- Release brake pedal slowly.

This Bleeding Procedure Must Be Performed 5 Times Per Brake Caliper.

Bleeding sequence:

- 1 - Front left brake caliper
- 2 - Right front brake caliper
- 3 - Left rear brake caliper
- 4 - Right rear brake caliper

A Road Test Must Be Performed After Bleeding. During This, At Least One ABS Regulation Must Be Performed!

- Install the rear wheels.



2 Description and Operation

- ⇒ [-2.1 Front Brake Caliper", page 134](#)
- ⇒ [-2.2 Rear Brake Caliper", page 136](#)
- ⇒ [-2.3 Brake Booster/Brake Master Cylinder", page 141](#)
- ⇒ [-2.4 Vacuum Pump", page 148](#)
- ⇒ [-2.5 Brake System Vacuum PumpV192, Gasoline Engine", page 149](#)
- ⇒ [-2.6 Flanging Tool", page 150](#)

2.1 Overview - Front Brake Caliper

- ⇒ [-2.1.1 Front Brake Caliper, FS III", page 134](#)
- ⇒ [-2.1.2 Front Brake Caliper, FN 3", page 135](#)

2.1.1 Overview - Front Brake Caliper, FS III

- ◆ Install complete repair kit when servicing.
- ◆ Only use mineral spirits to clean brake parts.
- ◆ Apply thin coat of Assembly Paste -G 052 150 A2- to brake cylinders, pistons and seals.





1 - Dust Cap

- Install onto bleeder valve

2 - Bleeder Valve

- 10 Nm
- Apply a thin coat of Assembly Paste -G 052 150 A2- to the threads before screwing in.

3 - Caps

- Insert in bushing

4 - Guide Pins

- 30 Nm

5 - Bearing Bushing

- Insert in brake caliper

6 - Brake Caliper

7 - Cap

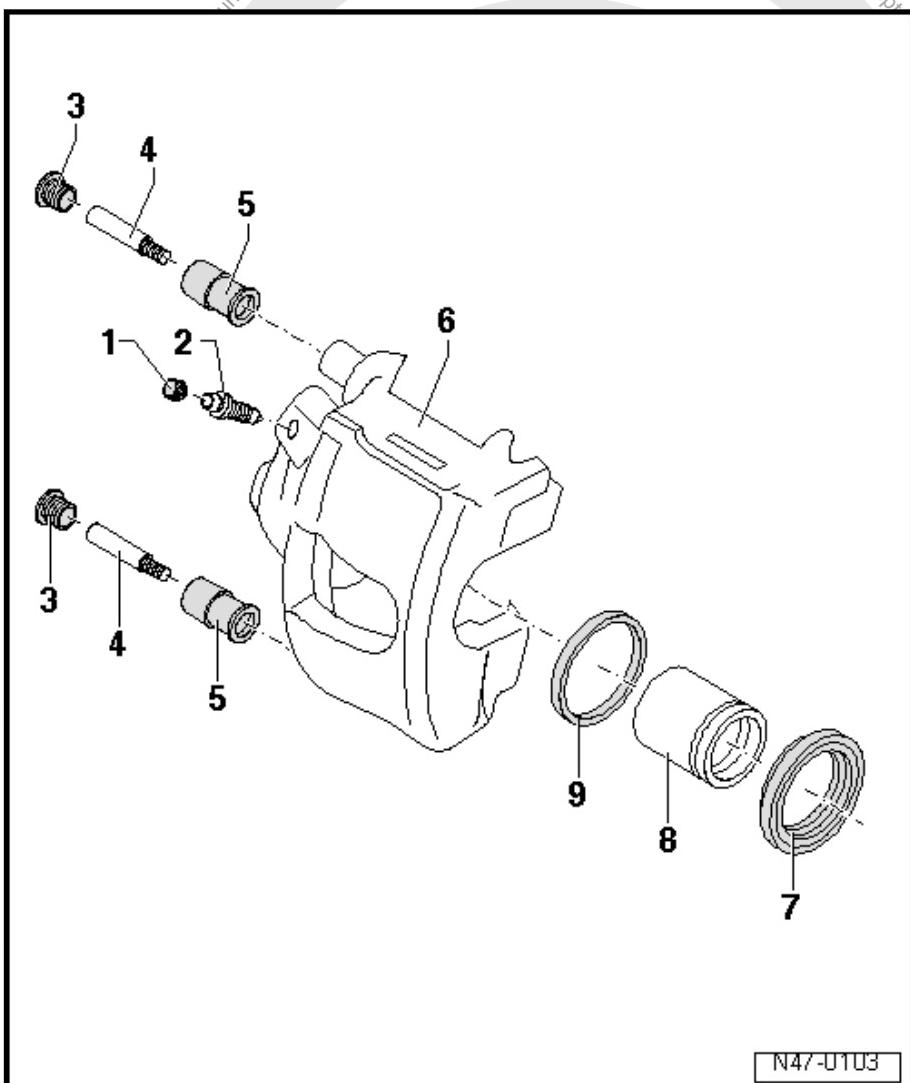
- Removing and installing. Refer to [C4.1.1 aliper Piston, FS III", page 160](#).
- Do not damage when installing piston

8 - Piston

- Removing and installing. Refer to [C4.1.1 aliper Piston, FS III", page 160](#).
- Apply thin coat of Assembly Paste -G 052 150 A2- to piston before inserting

9 - Seal

- Removing and installing. Refer to [C4.1.1 aliper Piston, FS III", page 160](#).



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2.1.2 Overview - Front Brake Caliper, FN 3

- ◆ Install complete repair kit when servicing.
- ◆ Only use mineral spirits to clean brake parts.
- ◆ Apply thin coat of Assembly Paste -G 052 150 A2- to brake cylinders, pistons and seals.



1 - Dust Cap

- Install onto bleeder valve

2 - Bleeder Valve

- 10 Nm
- Apply a thin coat of Assembly Paste -G 052 150 A2- to the threads before screwing in.

3 - Caps

- Insert in bushing

4 - Guide Pins

- 30 Nm

5 - Bearing Bushing

- Insert in brake caliper

6 - Brake Caliper

7 - Brake Carrier

- Bolt to brake caliper

8 - Spring

- Insert with both ends in holes of brake caliper

9 - Seal

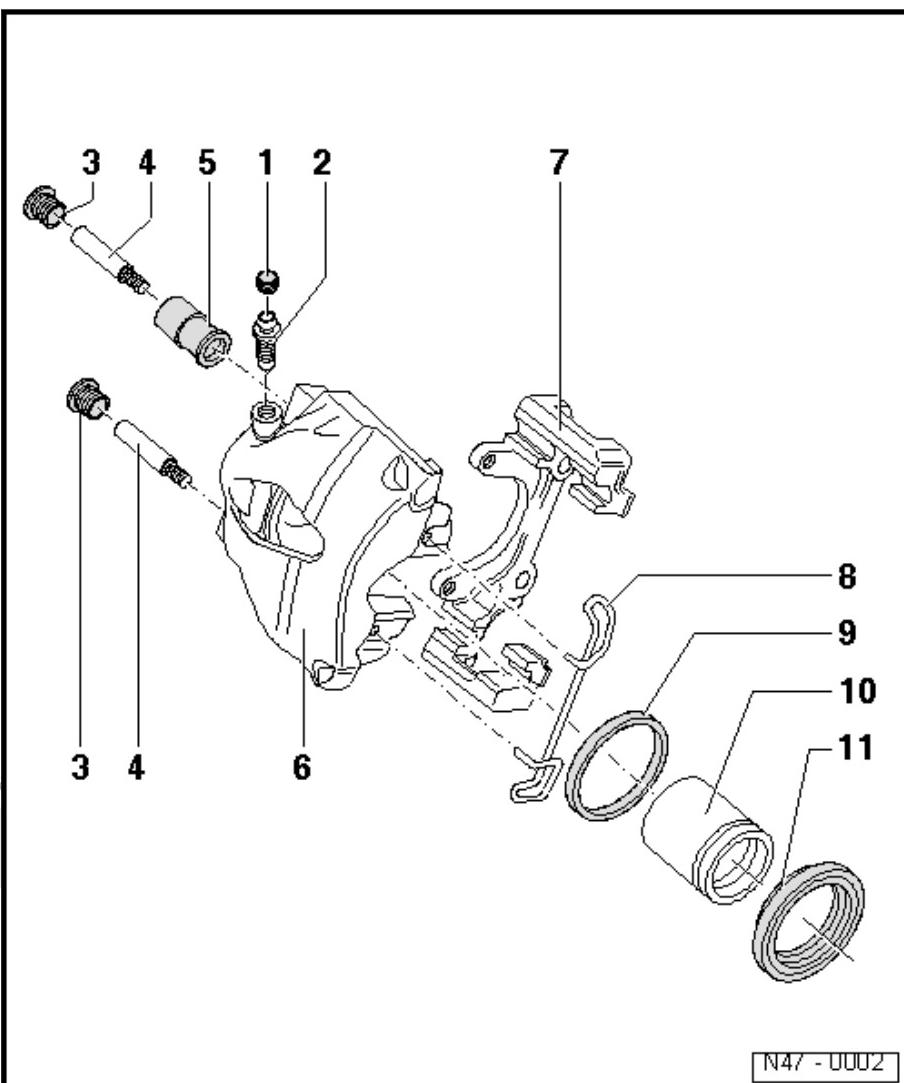
- Removing and installing. Refer to [C4.1.2 aliper Piston, FN 3", page 162](#).

10 - Piston

- Removing and installing. Refer to [C4.1.2 aliper Piston, FN 3", page 162](#).
- Apply thin coat of Assembly Paste -G 052 150 A2- to piston before inserting

11 - Cap

- Removing and installing. Refer to [C4.1.2 aliper Piston, FN 3", page 162](#).
- Do not damage when installing piston



N47 - UUUZ

2.2 Overview - Rear Brake Caliper

⇒ [-2.2.1 Rear Brake Caliper, CII 41 TRW", page 136](#)

⇒ [-2.2.2 Rear Brake Caliper, Bosch", page 139](#)

2.2.1 Overview - Rear Brake Caliper, CII 41 TRW

- ◆ Install complete repair kit when servicing.
- ◆ Only use mineral spirits to clean brake parts.
- ◆ New brake calipers are filled with brake fluid and are pre-bled.
- ◆ Apply thin coat of Assembly Paste -G 052 150 A2- to brake cylinders, pistons and seals.



- ◆ In case of repair, brake calipers must always be pre-bled before being installed into vehicle (without brake pads). Refer to [⇒ C4.2.3 aliper, Pre-Bleeding”, page 168](#).





1 - Brake Caliper with Parking Brake Cable Lever

- Replace brake caliper if leaking at parking brake cable lever
- After repairing, pre-bleed the brake caliper. Refer to [C4.2.3 aliper, Pre-Bleeding](#), page 168 .

2 - Dust Cap

3 - Bleeder Valve

- 10 Nm
- Apply a thin coat of Assembly Paste -G 052 150 A2- to the threads before screwing in.

4 - Hex Bolt

- 35 Nm
- Self-locking
- Replace
- When loosening and tightening, counter-hold at guide pin

5 - Guide Pin With Stepping

- Shorter than -item 6- [Item 6 \(page 138\)](#)
- Lubricate before installing the cap
- For the allocation. Refer to the Parts Catalog.

6 - Guide Pin

- Longer than -item 5- [Item 5 \(page 138\)](#)
- For the allocation. Refer to the Parts Catalog.

7 - Cap

- Install on brake carrier and guide pin.

8 - Brake Carrier

- With guide pins and protective caps
- Supplied as an assembled replacement part with sufficient grease on guide pins
- If the caps or guide pins are damaged, install the repair kit. Use the supplied grease packet to lubricate the guide pins.
- For the allocation. Refer to the Parts Catalog.

9 - Cap

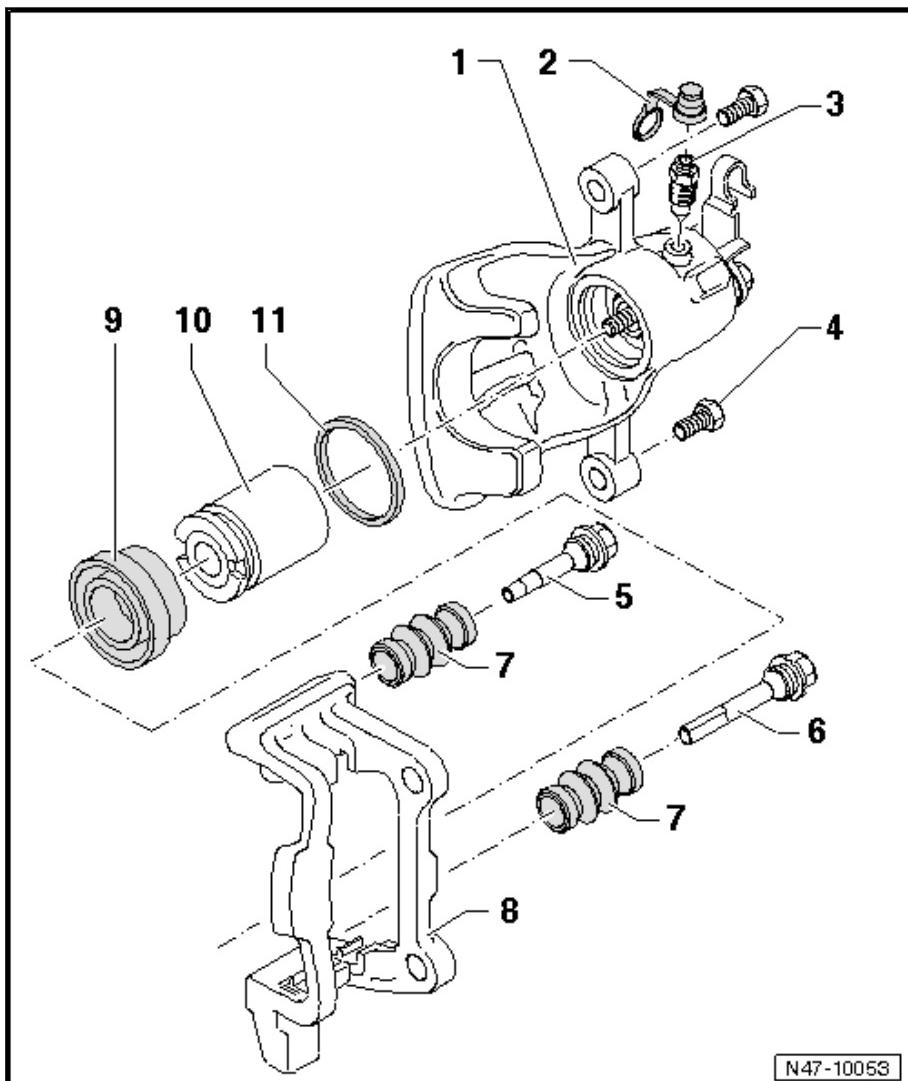
- Pull onto piston with outer sealing lip
- Removing and installing. Refer to [C4.2.1 aliper Piston, CII 41 TRW](#), page 165 .

10 - Piston with Automatic Adjustment

- Removing and installing. Refer to [C4.2.1 aliper Piston, CII 41 TRW](#), page 165 .
- Apply thin coat of Assembly Paste -G 052 150 A2- to piston before assembling.

11 - Seal

- Removing and installing. Refer to [C4.2.1 aliper Piston, CII 41 TRW](#), page 165 .





2.2.2 Overview - Rear Brake Caliper, Bosch

- ◆ Install complete repair kit when servicing.
- ◆ Only use mineral spirits to clean brake parts.
- ◆ New brake calipers are filled with brake fluid and are pre-bled.
- ◆ Apply thin coat of Assembly Paste -G 052 150 A2- to brake cylinders, pistons and seals.
- ◆ In case of repair, brake calipers must always be pre-bled before being installed into vehicle (without brake pads). Refer to [⇒ C4.2.3 aliper, Pre-Bleeding](#), page 168 .





1 - Brake Caliper with Parking Brake Cable Lever

- Replace brake caliper if leaking at parking brake cable lever
- After repairing, pre-bleed the brake caliper. Refer to [C4.2.3 aliper, Pre-Bleeding](#), page 168 .

2 - Bleeder Valve

- 10 Nm
- Apply a thin coat of Assembly Paste -G 052 150 A2- to the threads before screwing in.

3 - Dust Cap

4 - Bolt

- 35 Nm
- Self-locking
- Replace
- When loosening and tightening, counter-hold at guide pin

5 - Upper Guide Pin

- Lubricate before installing the cap
- For the allocation. Refer to the Parts Catalog.

6 - Cap

- Install on brake carrier and guide pin.

7 - Lower Guide Pin

- With recess
- Lubricate before installing the cap
- For the allocation. Refer to the Parts Catalog.

8 - Guide Grommet

- On the lower guide pin

9 - Brake Carrier

- Supplied as an assembled replacement part with sufficient grease on guide pins
- If the caps or guide pins are damaged, install the repair kit. Use the supplied grease packet to lubricate the guide pins.
- For the allocation. Refer to the Parts Catalog.

10 - Cap

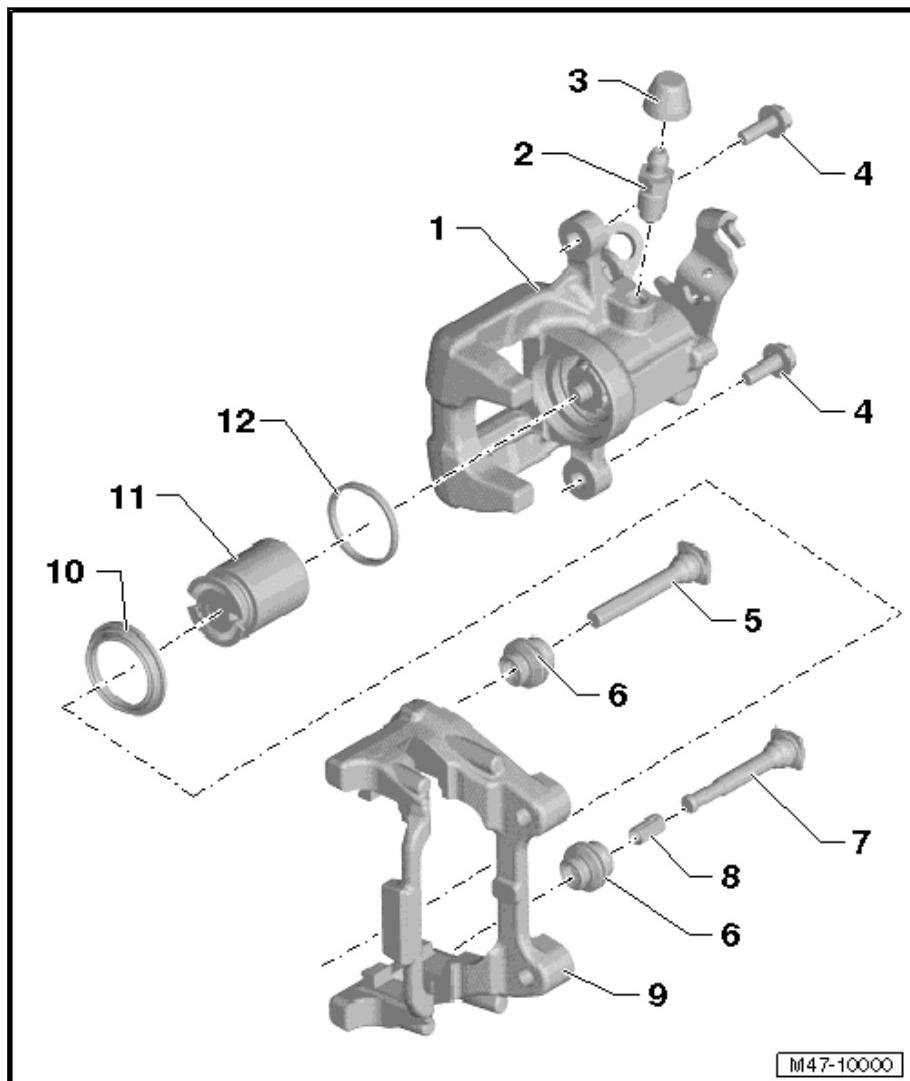
- Pull onto piston with outer sealing lip
- Removing and installing. Refer to [C4.2.2 aliper Piston, Bosch](#), page 166 .

11 - Piston with Automatic Adjustment

- Removing and installing. Refer to [C4.2.2 aliper Piston, Bosch](#), page 166 .
- Apply thin coat of Assembly Paste -G 052 150 A2- to piston before assembling.

12 - Seal

- Removing and installing. Refer to [C4.2.2 aliper Piston, Bosch](#), page 166 .





2.3 Overview - Brake Booster/Brake Master Cylinder

⇒ [-2.3.1 Brake Booster/Brake Master Cylinder, with Tabs on Brake Master Cylinder", page 141](#)

⇒ [-2.3.2 Brake Booster/Brake Master Cylinder, with Securing Pin", page 143](#)

2.3.1 Overview - Brake Booster/Brake Master Cylinder, with Tabs on Brake Master Cylinder



Note

Use only new brake fluid. Observe information on brake fluid reservoir!





1 - Pedal Assembly

- Removing and installing. Refer to [P2.9 edal](#), page 124 .

2 - Hex nut

- 25 Nm
- Always replace if removed
- Self-locking
- Note the tightening sequence. Refer to [page 121](#) .

3 - Seal

- For the brake booster

4 - Brake Booster

- On gasoline engines, the required vacuum is supplied either by the intake manifold or by a mechanical vacuum pump.
- Some gasoline vehicles with a DSG transmission, but not having an hydraulic brake booster, have a Brake System Vacuum Pump - V192-. Refer to [-2.5 Brake System Vacuum PumpV192, Gasoline Engine](#), page 149 .
- Diesel engines have a vacuum pump to produce the vacuum. Refer to [B2.4.2 ooster Vacuum Pump, Diesel Vehicles](#), page 148 .
- Functional check:
 - With engine switched off, depress brake pedal firmly several times (to exhaust the vacuum in the unit).
 - Depress and hold brake pedal with average foot pressure and start engine. If brake booster is working properly, pedal will be felt to give noticeably under foot (booster assistance becomes effective).
- Replace as a unit in the event of malfunction (previously, check all vacuum lines).
- Removing and installing. Refer to [B4.6 ooster](#), page 205 .
- Allocation. Refer to the Parts Catalog.
- Check the brake booster vacuum system for faults. Refer to [S3.1 ystem, Checking](#), page 153

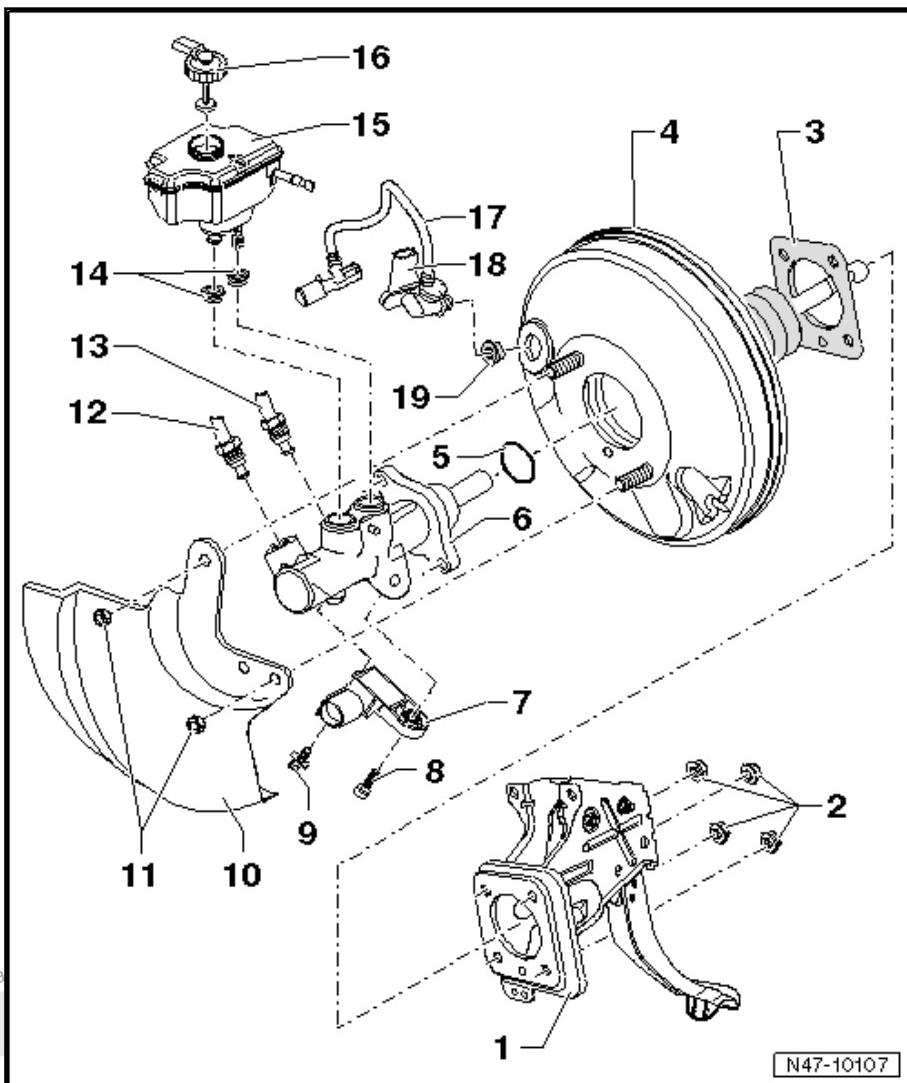
5 - Seal

6 - Brake Master Cylinder

- Allocation. Refer to the Parts Catalog.
- Cannot be serviced. Replace as complete unit if malfunctioning.
- With retaining tabs for the brake fluid reservoir
- Removing and installing. Refer to [M4.5 aster Cylinder](#), page 186 .

7 - Brake Lamp Switch -F-

- Including the Brake Pedal Switch -F47-
- Removing and installing. Refer to [B4.3 rake Lamp SwitchF](#), page 169 .





8 - TORX® Socket Bolt

- 5 Nm

9 - Clip

10 - Heat Shield

11 - Hex Nut

- 25 Nm
- Always replace if removed
- Self-locking

12 - Brake Line

- 14 Nm
- Master brake cylinder/secondary piston circuit to hydraulic unit

13 - Brake Line

- 14 Nm
- Brake master cylinder/primary piston circuit to hydraulic unit

14 - Sealing Plug

- Moisten with brake fluid and press into brake fluid reservoir

15 - Brake Fluid Reservoir

- Removing and installing. Refer to [F4.4 Liquid Reservoir](#), page 177.

16 - Cap

17 - Vacuum Hose

- Insert into brake booster

18 - Vacuum Sensor -G608-

- On vehicles with a hydraulic brake booster
- Removing and installing. Refer to [V4.7 Vacuum Sensor G608](#), page 247.



Note

For some vehicles without a hydraulic brake booster, there is a Brake Booster Pressure Sensor -G294-.

- Brake Booster Pressure Sensor -G294-, removing and installing. Refer to [B4.8 Brake Booster Pressure Sensor G294](#), page 247.

19 - Sealing Plug

- Connection for vacuum hose

2.3.2 Overview - Brake Booster/Brake Master Cylinder, with Securing Pin



Note

Use only new brake fluid. Observe information on brake fluid reservoir!





1 - Pedal Assembly

- Removing and installing. Refer to [⇒ P2.9 edal", page 124](#)
- Disconnecting from brake booster. Refer to [⇒ P2.6 edal, Removing from Brake Booster", page 119](#).
- Clipping to the brake booster. Refer to [⇒ P2.7 edal, Attaching to Brake Booster", page 120](#).

2 - Nut

- 25 Nm
- Always replace if removed
- Note the tightening sequence. Refer to [⇒ page 121](#).

3 - Seal

- For the brake booster
- Check for damages

4 - Brake Booster

- On gasoline engines, the required vacuum is supplied either by the intake manifold or by a vacuum pump.
- Functional check:
 - With engine switched off, depress brake pedal firmly several times (to exhaust the vacuum in the unit).
 - Depress and hold brake pedal with average foot pressure and start engine. If brake booster is working properly, pedal will be felt to give noticeably under foot (booster assistance becomes effective).
- Replace as a unit in the event of malfunction (previously, check all vacuum lines).
- Removing and installing. Refer to [⇒ B4.6 ooster", page 205](#).
- Allocation. Refer to the Parts Catalog.
- Check the brake booster vacuum system for faults. Refer to [⇒ S3.1 ystem, Checking", page 153](#)

5 - Seal

- Pay attention to proper seating

6 - Brake Master Cylinder

- Allocation. Refer to the Parts Catalog.
- Cannot be serviced. Replace as complete unit if malfunctioning.
- Removing and installing. Refer to [⇒ M4.5 aster Cylinder", page 186](#).

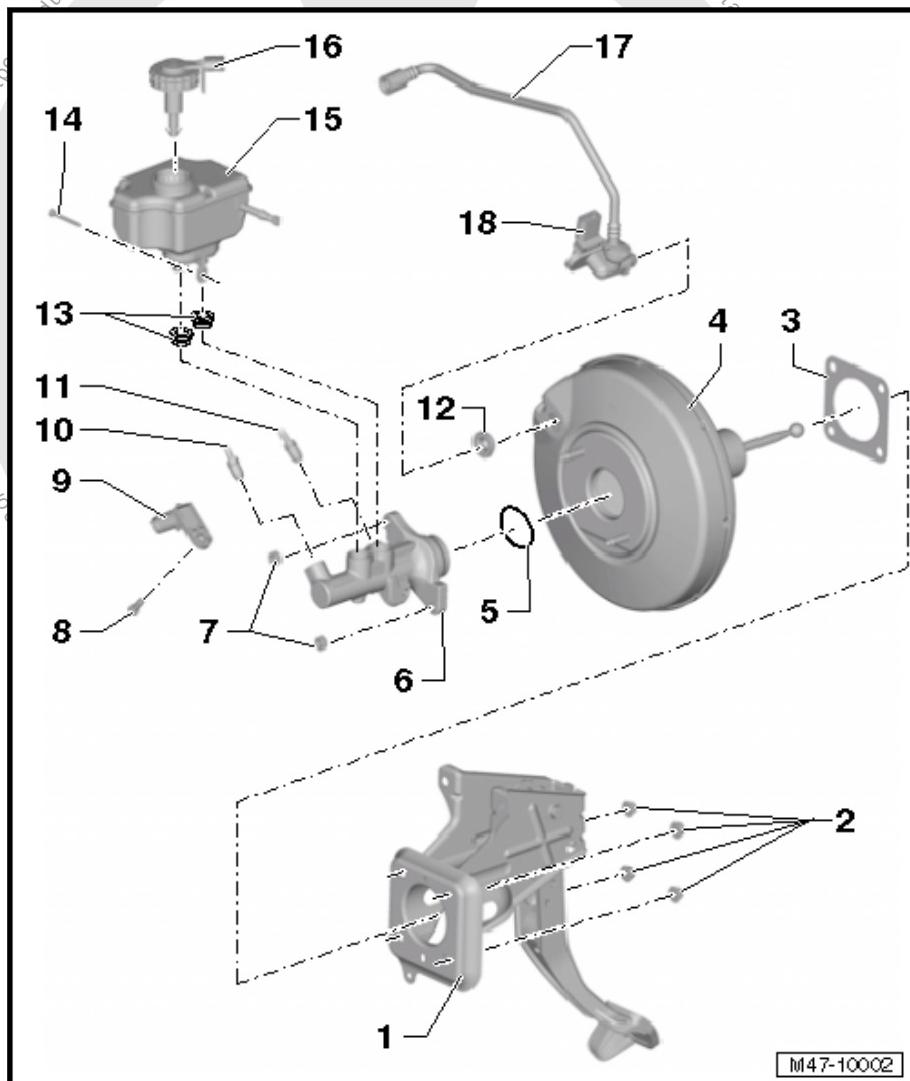
7 - Nut

- 25 Nm
- Always replace if removed

8 - Bolt

- 5 Nm

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M47-10002



9 - Brake Lamp Switch -F-

- Including the Brake Pedal Switch -F47-
- Removing and installing. Refer to [⇒ B4.3 Brake Lamp SwitchF](#), page 169 .

10 - Brake Line

- 14 Nm
- Brake master cylinder/secondary piston circuit to the ABS Hydraulic Unit -N55-
- Identification: 6.5 mm diameter and tube fitting with a M12 x 1 thread

11 - Brake Line

- 14 Nm
- Brake master cylinder/primary piston circuit to the ABS Hydraulic Unit -N55-
- Identification: 6.5 mm diameter and tube fitting with a M12 x 1 thread

12 - Sealing Plug

- Connection for vacuum hose

13 - Sealing Plug

- Moisten with brake fluid and press into brake fluid reservoir

14 - Mounting Pin

- Push to right to remove the brake fluid reservoir

15 - Brake Fluid Reservoir

- Removing and installing. Refer to [⇒ F4.4 Brake Fluid Reservoir](#), page 177 .

16 - Cap

- With Brake Fluid Level Warning Switch -F34-

17 - Vacuum Line

- Insert into brake booster
- Allocation. Refer to the Parts Catalog.
- Check if brake booster is malfunctioning. Refer to [⇒ S3.1 System, Checking](#), page 153 .

18 - Vacuum Sensor -G608-

- Vacuum Sensor -G608- for vehicles with HBB (hydraulic brake booster)
- Vacuum Sensor -G608-, removing and installing. Refer to [⇒ B4.8 Brake Booster Pressure Sensor G294](#), page 247 .
- Allocation. Refer to the Parts Catalog.

2.3.3 Overview - Brake Booster/Brake Master Cylinder, RHD



Use only new brake fluid. Observe information on brake fluid reservoir!



1 - Pedal Assembly

- Removing and installing. Refer to [⇒ P2.9 edal", page 124](#).
- Disconnecting from brake booster. Refer to [⇒ P2.6 edal, Removing from Brake Booster", page 119](#).
- Clipping to the brake booster. Refer to [⇒ P2.7 edal, Attaching to Brake Booster", page 120](#).

2 - Hex bolt

- 25 Nm

3 - Hex nut

- Always replace if removed
- Self-locking
- 25 Nm

4 - Seal

- For the brake booster
- Check for damages

5 - Brake Booster

- Removing and installing. Refer to [⇒ B4.6 ooster", page 205](#).
- On gasoline engines, the required vacuum is supplied either by the intake manifold or by a mechanical vacuum pump.
- Some gasoline vehicles with a DSG transmission, but not having an hydraulic brake booster, have a Brake System Vacuum Pump -V192-. Refer to [⇒ -2.5 Brake System Vacuum PumpV192, Gasoline Engine", page 149](#).
- Diesel engines have a vacuum pump to produce the vacuum. Refer to [⇒ B2.4.2 ooster Vacuum Pump, Diesel Vehicles", page 148](#).
- Functional check:
 - With engine switched off, depress the brake pedal firmly several times. Doing so removes the vacuum in the unit.
 - Depress and hold brake pedal with average foot pressure and start engine. If brake booster is working properly, pedal will be felt to give noticeably under foot (booster assistance becomes effective).
- Replace as a unit in the event of malfunction (previously, check all vacuum lines).

6 - Seal

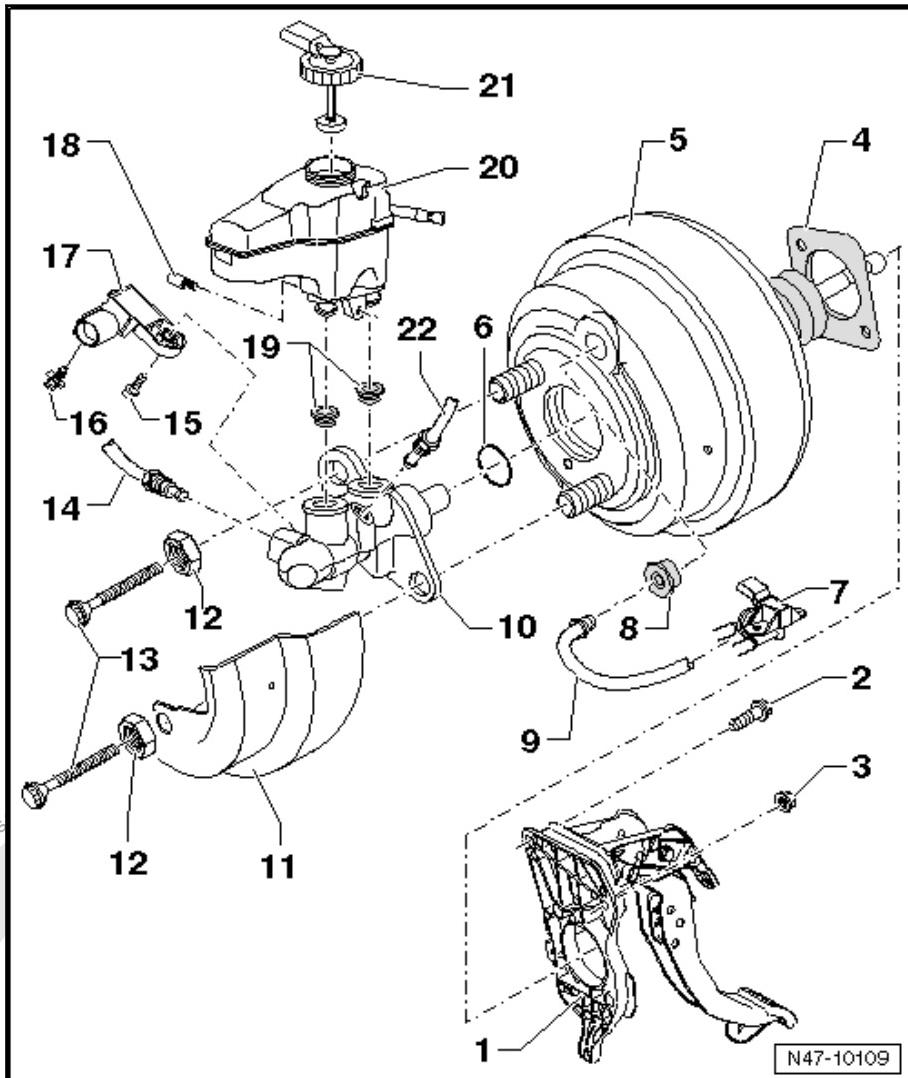
- Pay attention to proper seating

7 - Vacuum Sensor -G608-

- Only on vehicles with a hydraulic brake booster
- Removing and installing. Refer to [⇒ V4.7 acuum SensorG608 ", page 247](#).



Note





For some vehicles without a hydraulic brake booster, there is a Brake Booster Pressure Sensor - G294-.

- Brake Booster Pressure Sensor -G294-, removing and installing. Refer to [⇒ B4.8 Brake Booster Pressure Sensor G294 ", page 247](#).

8 - Sealing Plug

- Connection for vacuum hose

9 - Vacuum hose

- Insert into brake booster

10 - Brake Master Cylinder

- Allocation. Refer to the Parts Catalog.
- Cannot be serviced. Replace as complete unit if malfunctioning.
- Removing and installing. Refer to [⇒ M4.5 Master Cylinder", page 186](#).

11 - Heat Shield

12 - Hex nut

- 50 Nm
- Replace after removing

13 - Twelve point bolt

- 25 Nm

14 - Brake line

- Master brake cylinder/secondary piston circuit to hydraulic unit
- 14 Nm

15 - TORX® socket bolt

- 5 Nm

16 - Clip

17 - Brake Lamp Switch -F-

- Removing and installing. Refer to [⇒ B4.3 Brake Lamp Switch F ", page 169](#).

18 - Bolts

- 4 Nm

19 - Sealing Plug

- Moisten with brake fluid and press into brake fluid reservoir

20 - Brake Fluid Reservoir

- Removing and installing. Refer to [⇒ F4.4 Brake Fluid Reservoir", page 177](#).

21 - Cap

22 - Brake line

- Brake master cylinder/primary piston circuit to hydraulic unit
- 14 Nm

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2.4 Overview - Vacuum Pump

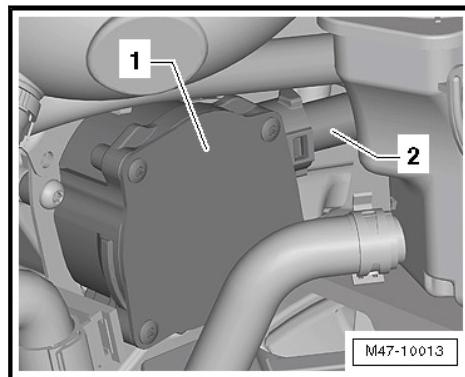
⇒ [B2.4.1 ooster Vacuum Pump, 2.5L Gasoline Engine", page 148](#)

⇒ [B2.4.2 ooster Vacuum Pump, Diesel Vehicles", page 148](#)

⇒ [B2.4.3 ooster Vacuum Pump, 2.0L Gasoline Engine", page 148](#)

2.4.1 Brake Booster Vacuum Pump, 2.5L Gasoline Engine

Must not be disassembled.



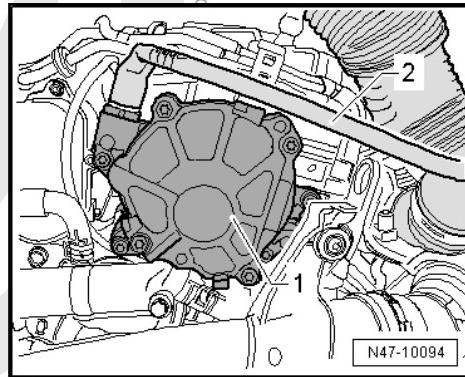
Vacuum pump -1-.

Vacuum line to brake booster -2- with check valve.

- Vacuum pump, removing and installing. Refer to ⇒ Rep. Gr. 15; Cylinder Head; Vacuum Pump, Removing and Installing.

2.4.2 Brake Booster Vacuum Pump, Diesel Vehicles

Must not be disassembled.



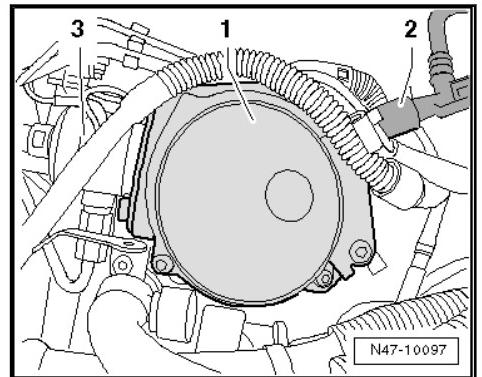
Vacuum pump -1-.

Vacuum hose to brake booster -2- with check valve.

- Vacuum pump, removing and installing. Refer to ⇒ Engine Mechanical, Fuel Injection and Glow Plug; Rep. Gr. 15.

2.4.3 Brake Booster Vacuum Pump, 2.0L Gasoline Engine

Must not be disassembled.



Vacuum pump -1-.

Vacuum hose to brake booster -2- with check valve.

High pressure fuel pump -3-.

- Vacuum pump, removing and installing. Refer to ⇒ Rep. Gr. 15.

2.5 Overview - Brake System Vacuum Pump -V192-, Gasoline Engine

Only on gasoline vehicles with DSG transmission without a hydraulic brake booster





1 - Bolt

- 8 Nm
- Quantity: 2

2 - Brake System Vacuum Pump -V192-

- Removing and installing. Refer to ⇒ [B4.9 Brake System Vacuum Pump V192, Gasoline Engine](#), page 248.

3 - Brake Booster Pressure Sensor -G294-

- Removing and installing. Refer to ⇒ [B4.8 Brake Booster Pressure Sensor G294](#), page 247.

4 - Vacuum Line

- For the allocation. Refer to the Parts Catalog.

5 - Bracket

6 - Cable Bracket

7 - Rubber Buffer

- For the allocation. Refer to the Parts Catalog.
- Quantity: 3
- Do not press rubber bushings out of their bracket during installation

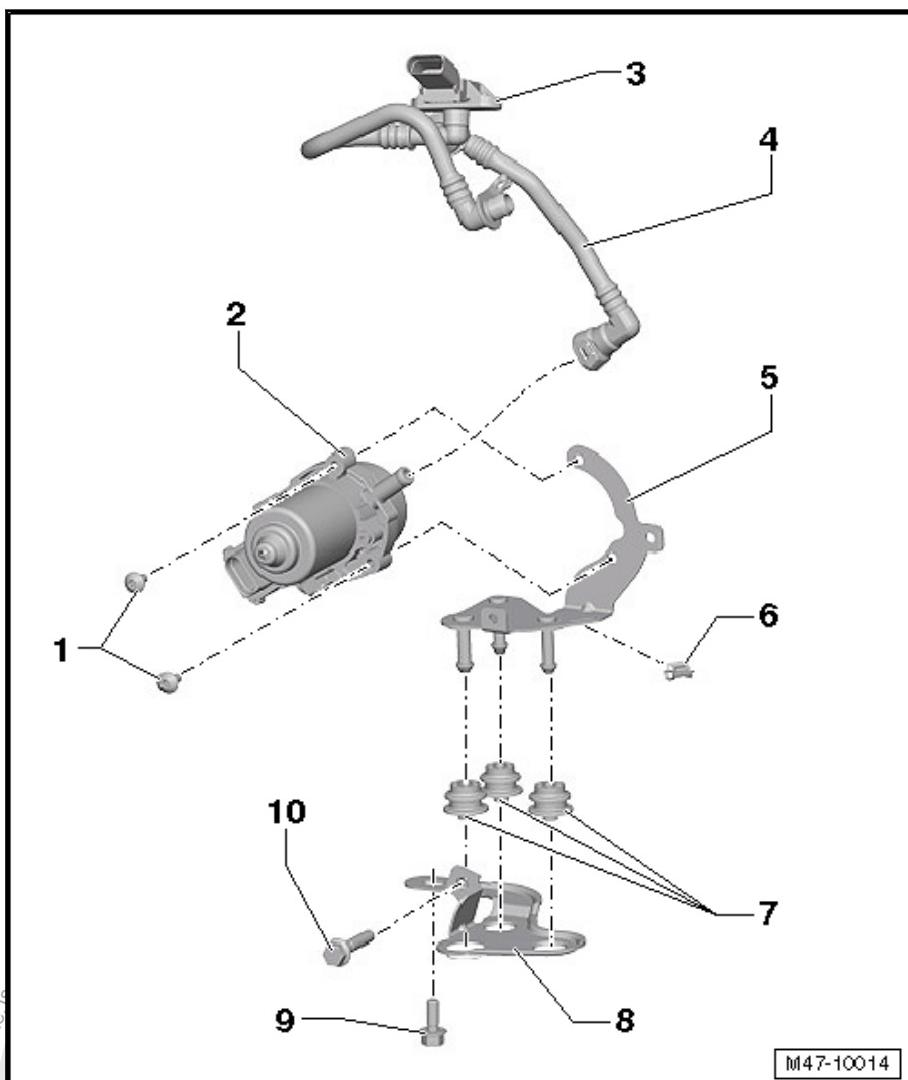
8 - Bracket

9 - Bolt

- 25 Nm

10 - Bolt

- 25 Nm



2.6 Overview - Flanging Tool



1 - Flanging Tool Upper Section

- Remove to change Clamp Jaws

2 - Hand Grip Mount

- must be removed to reach the upper section retaining bolt

3 - Bolt

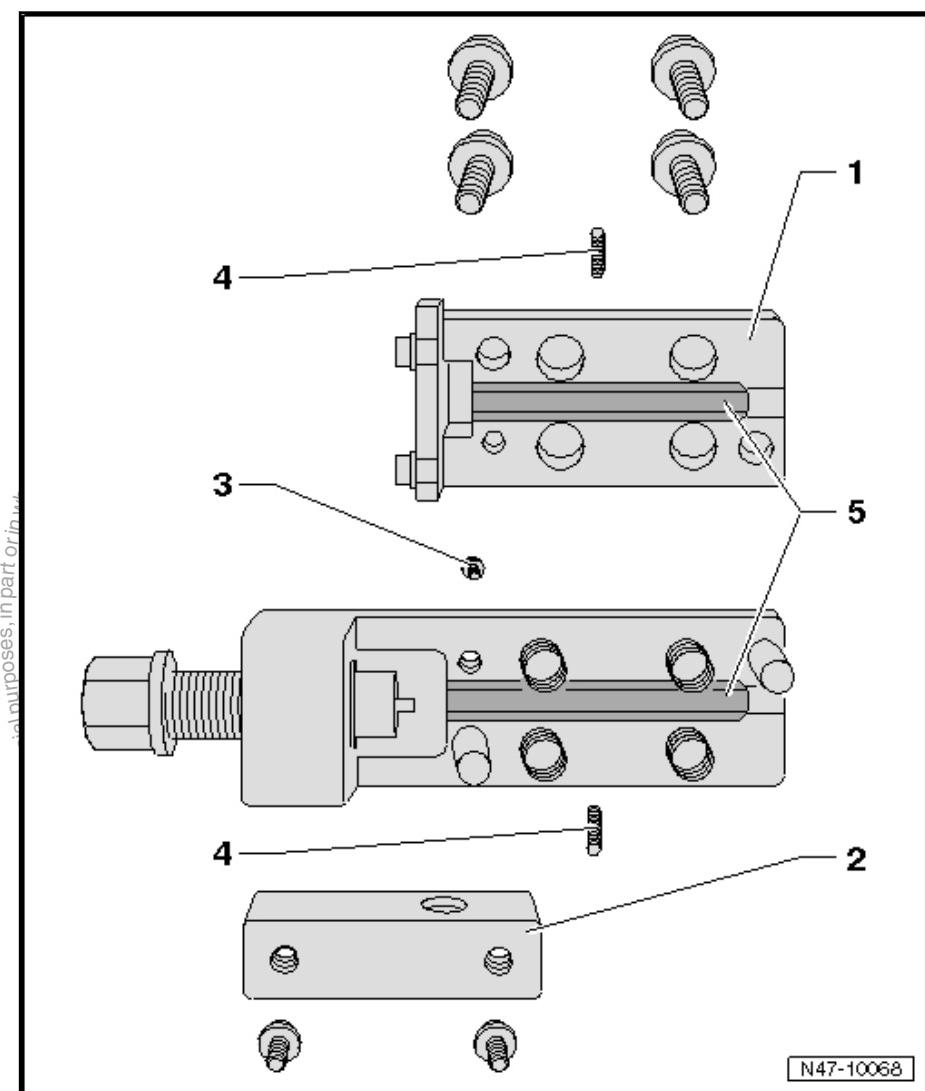
- For upper part of flaring tool

4 - Clamp Jaws Threaded Pins

- Center and hold the Clamp Jaws
- 2 mm inner hex socket

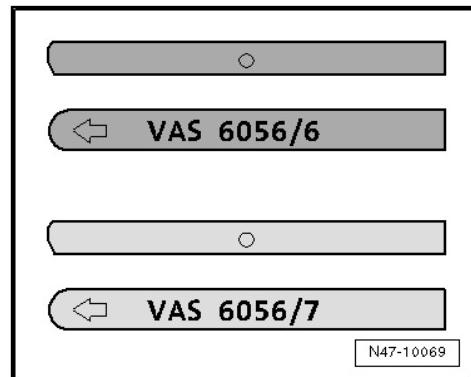
5 - Clamp Jaws

- Various
- Assembly instructions.
Refer to [Fig. "Clamp Jaws Installation Instructions:"](#), page 151



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Clamp Jaws Installation Instructions:



N47-10069

- ◆ -VAS6056/6- (dark) for black brake lines
- ◆ -VAS6056/7- (light) for green brake lines



 Note

- ◆ *The arrow on the rounded side of the Clamp Jaws must point toward the edge of the housing.*
- ◆ *The straight side of the Clamp Jaws must be installed toward the spindle, otherwise the flanged head will not be formed correctly.*





3 Diagnosis and Testing

- ⇒ [S3.1 ystem, Checking", page 153](#)
- ⇒ [C3.2 heck Valve, Checking", page 159](#)
- ⇒ [f3.3 or Leaks", page 159](#)

3.1 Vacuum System, Checking

- ⇒ [I3.1.1 nstruction", page 153](#)
- ⇒ [B3.1.2 eake Servo Tester VAS6721, Connecting", page 153](#)
- ⇒ [C3.1.3 hecking", page 155](#)
- ⇒ [T3.1.4 est", page 156](#)
- ⇒ [C3.1.5 reating with Hand Vacuum Pump VAS6213 ", page 158](#)

3.1.1 Inspection Instruction

Inspection Instruction

If a customer has reported a problem with the brake booster or a so-called »hard brake pedal«, perform a Fault Finding.

The following components are included in the check:

- ◆ Brake Booster
- ◆ Seal between the master brake cylinder and the brake booster
- ◆ Check valve
- ◆ Vacuum hoses and connectors
- ◆ Vacuum pump (if equipped). Refer to ⇒ [C3.1.5 reating with Hand Vacuum Pump VAS6213 ", page 158](#).

The geographic location will influence the measurement results.
The higher above sea level, the lower the air pressure.

Observe test requirements:

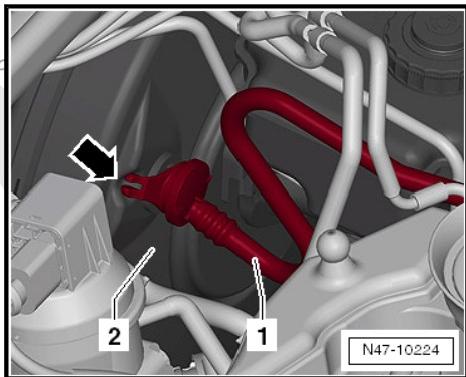
- ◆ Check all the vacuum hoses for damage (for example, tears or damaged caused by animals) and make sure they are secure
- ◆ Maintain clean working conditions when working on the vacuum system
- ◆ Clean the engine compartment before starting, if necessary

Special tools and workshop equipment required

- ◆ Brake Servo Tester -VAS6721-

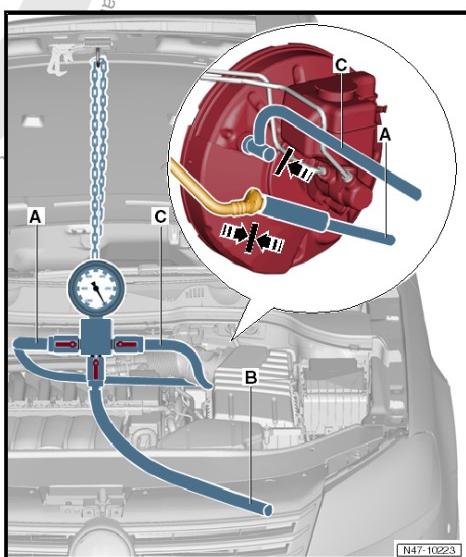
3.1.2 Brake Servo Tester -VAS6721-, Connecting

- Pull the vacuum hose -1- from the brake booster -2-.



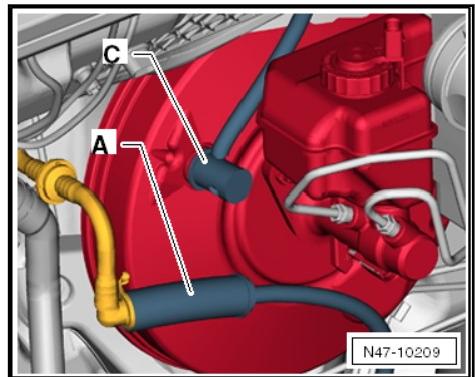
Pressing the brake pedal a few times beforehand makes it easier to remove the vacuum hose.

- Connect the Brake Servo Tester -VAS6721-
-see following illustrations-.



Position	Component	Explanation
A	Shut-off valve	In direction toward the vacuum hose, the check valve and vacuum pump (if equipped)
B	Shut-off valve	<ul style="list-style-type: none">◆ Opening the Brake Servo Tester -VAS6721- makes it easier to remove.◆ Open to simulate an incorrect source◆ Connect the Hand Vacuum Pump - VAS6213-.
C	Shut-off valve	Toward the brake booster

- Connect the Brake Servo Tester -VAS6721- hose -A- to the vacuum hose.



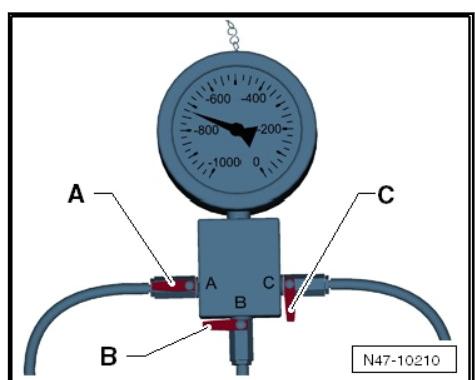
- Push the adapter -C- into the brake booster.

3.1.3 Vacuum, Checking



Note

- ◆ The average earth atmospheric air pressure at sea level (N.N.) is 1013 mbar (14.69 psi).
- ◆ The air pressure decreases dramatically at higher altitudes (approximately 100 mbar (1.45 psi) every 1000 meters (3210,84 ft) higher).
- ◆ Local and time fluctuations will influence the vacuum.
- ◆ A cold engine, the A/C switched being on and even only the engine idling can negatively influence the vacuum.
- Check all the vacuum hoses beforehand for damage (for example, tears or damaged caused by animals) and make sure they are secure
- Connect the Brake Servo Tester -VAS6721-. Refer to [B3.1.2 Brake Servo Tester VAS6721, Connecting](#), page 153.
- Open the shut-off valve -A-.
- Close the shut-off valves -B- and -C-.



- Start the warm (above 60 °C (140 °F)) engine and press the accelerator pedal one time quickly (engine RPM higher than 2,000).
- Read the measured value displayed.

Normally (see note) the vacuum should be between 600 and 950 mbar (8.70 to 13.77 psi) (depending on the engine installed).



Check the vacuum system for leaks if the measured value is not reached, even though all requirements (see notes).

- Create the vacuum using a Hand Vacuum Pump -VAS6213- for comparison purposes. Refer to [⇒ C3.1.5 reating with Hand Vacuum Pump VAS6213](#), page 158.

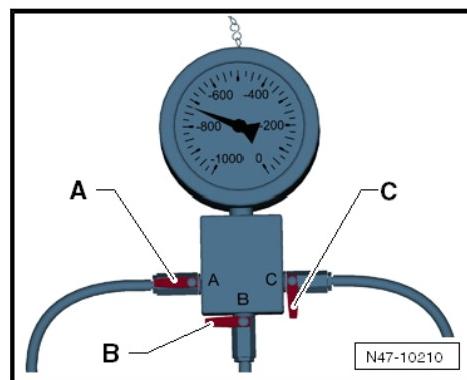
Opening the shut-off valve -B- makes it easier to remove the hose connections and the adapter.

3.1.4 Leak Test



Note

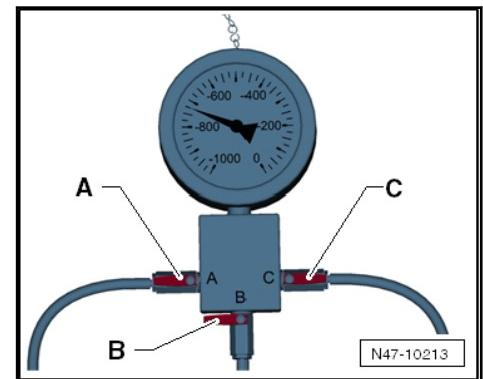
- ◆ The average earth atmospheric air pressure at sea level (N.N.) is 1013 mbar (14.69 psi).
 - ◆ The air pressure decreases dramatically at higher altitudes (approximately 100 mbar (1.45 psi) every 1000 meters (3280.84 ft) (higher)).
 - ◆ Local and time fluctuations will influence the vacuum.
 - ◆ A cold engine, the A/C switched being on and even only the engine idling can negatively influence the vacuum.
- Check all the vacuum hoses beforehand for damage (for example, tears or damaged caused by animals) and make sure they are secure
 - Connect the Brake Servo Tester -VAS6721-. Refer to [⇒ B3.1.2 rake Servo Tester VAS6721, Connecting](#), page 153
 - Open the shut-off valve -A-.
 - Close the shut-off valves -B- and -C-.



- Start the warm (above 60 °C (140 °F)) engine and press the accelerator pedal one time quickly (engine RPM higher than 2,000).

Normally (see note) the vacuum should be between 600 and 950 mbar (8.70 to 13.77 psi) (depending on the engine installed).

- Open the shut-off valve -C- and evacuate the brake booster.



- Turn off the engine.
- Read the measured value displayed and write it down.

The vacuum may drop 400 mbar (5.8 psi) within 12 hours.

If the drop in vacuum is greater, check the....

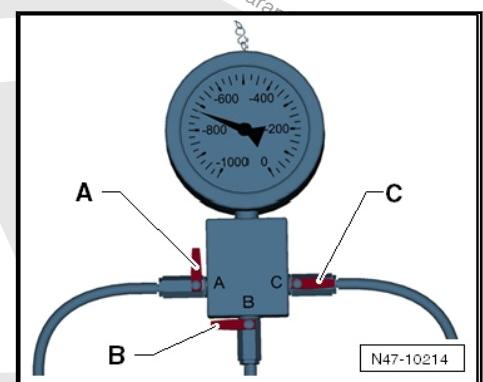
- 1 - Brake Booster
- or
- 2 - Check Valve, Vacuum Hoses and Connections and Vacuum Pump/Intake Manifold

for leaks.

The vacuum will drop considerably within a few seconds if there are large leaks.

Checking the Vacuum Near the Brake Booster:

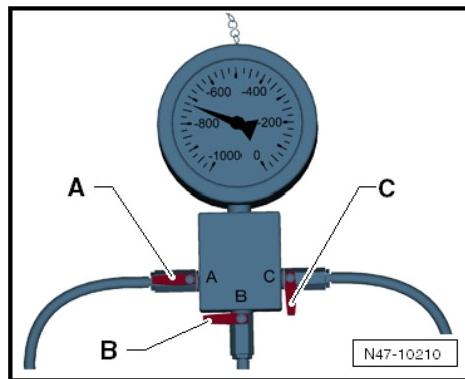
- Close the shut-off valve -A- after creating the vacuum to test the brake booster vacuum.



Perform the Vacuum Test Near the Check Valve, Vacuum Hoses With Connectors and Vacuum Pump/Intake Manifold:

- Close the shut-off valve -C- after creating the vacuum to check the Brake Servo Tester -VAS6721- vacuum up to the intake manifold or up to the vacuum pump.





Opening the shut-off valve -B- makes it easier to remove the hose connections and the adapter.

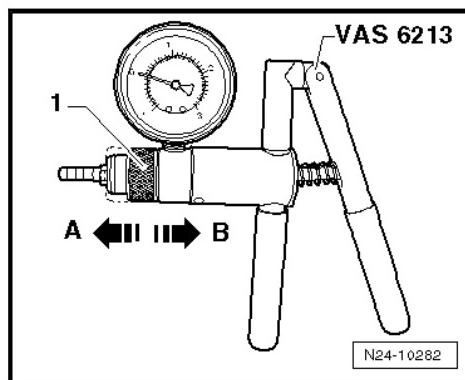
3.1.5 Vacuum, Creating with Hand Vacuum Pump -VAS6213-

Special tools and workshop equipment required

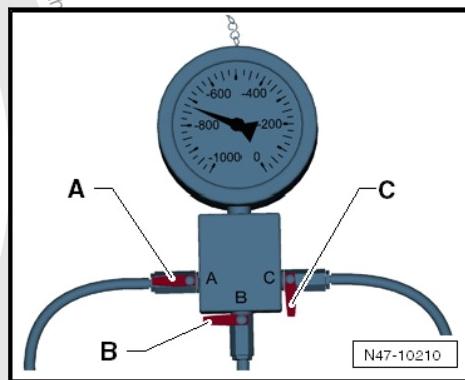
- ◆ Hand Vacuum Pump -VAS6213-

In certain situations, the vacuum can be created using a Hand Vacuum Pump -VAS6213- instead of using the engine or a vacuum pump.

- Set the slide ring -1- on the Vacuum Pump -VAS6213- in position -A- for "vacuum".



- Connect the Hand Vacuum Pump -VAS6213- to the vacuum hose on the connection -B- on the Brake Servo Tester -VAS6721-.



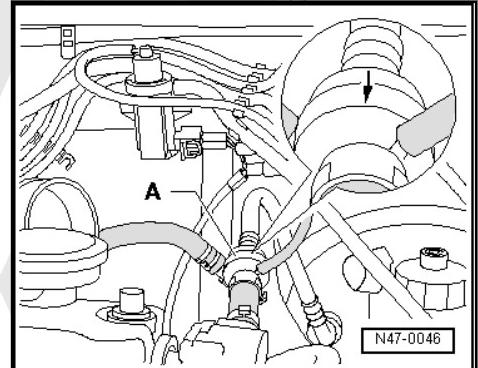
- Open the shut-off valve -B-.
- Create the vacuum using the Hand Vacuum Pump -VAS6213- until a vacuum between 600 and 950 mbar (8.7



to 13.77 psi) on the Brake Servo Tester -VAS6721- is displayed.

- Perform the tests.

3.2 Check Valve, Checking



- ◆ The check valve -A- must allow air through in direction of -arrow-.
- ◆ The check valve must remain closed for opposite direction.

Observe correct installation position!

3.3 Checking for Leaks

⇒ [T3.3.1 est Under Pressure", page 159](#)

⇒ [R3.3.2 equirement", page 159](#)

⇒ [F3.3.3 uid, Changing Every 2 Years", page 159](#)

3.3.1 Leakage Test Under Pressure

Special tools and workshop equipment required

- ◆ Brake Pressure Gauge -VAG1310A-
- ◆ Brake Pressure Gauge - Adapter M10 -VAG1310/6-

3.3.2 Test Requirement

Brake system (hydraulic unit, brake hoses, brake lines and brake calipers) operating properly and free of leaks.

- Remove the bleeder valve from one of the front brake calipers. Connect and bleed using the Brake Pressure Gauge -VAG1310A-.
- Apply pressure to brake pedal until the gauge indicates a pressure of 50 bar (725 psi). The pressure must not drop by more than 4 bar (58 psi) during the test period of 45 seconds. Replace master cylinder if pressure drops greatly.

3.3.3 Brake Fluid, Changing Every 2 Years

Maintenance. Refer to ⇒ Maintenance; Booklet ; Brake and Clutch Systems: Changing Brake Fluid.



4 Removal and Installation

- ⇒ [B4.1 Brake Caliper Piston", page 160](#) ⇒ [B4.2 Brake Caliper Piston", page 165](#)
- ⇒ [B4.3 Brake Lamp Switch", page 169](#)
- ⇒ [F4.4 Fluid Reservoir", page 177](#)
- ⇒ [M4.5 Master Cylinder", page 186](#)
- ⇒ [B4.6 Hose", page 205](#)
- ⇒ [V4.7 Vacuum SensorG608 ", page 247](#)
- ⇒ [B4.8 Brake Booster Pressure SensorG294 ", page 247](#)
- ⇒ [B4.9 Brake System Vacuum PumpV192, Gasoline Engine", page 248](#)

4.1 Front Brake Caliper Piston

- ⇒ [C4.1.1 Brake Piston, FS III", page 160](#)
- ⇒ [C4.1.2 Brake Piston, FN 3", page 162](#)

4.1.1 Brake Caliper Piston, FS III

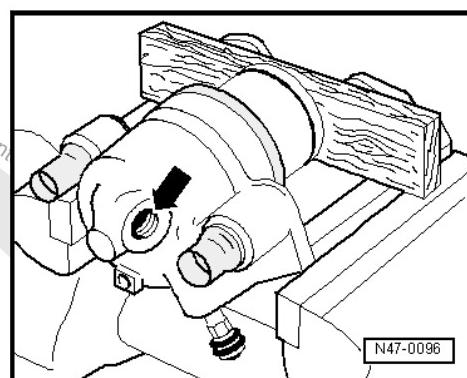
Special tools and workshop equipment required

- ◆ Trim Removal Wedge -3409-
- ◆ Piston Resetting Tool -T10145-

Removing

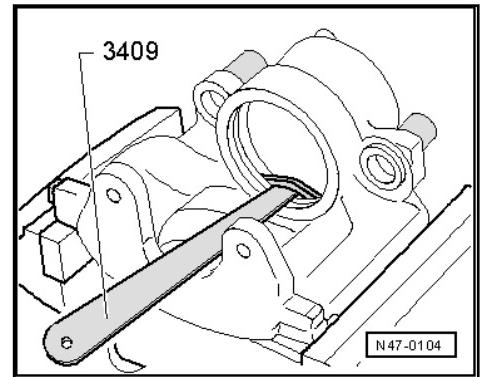
- Force piston from brake caliper using compressed air.

Place a Wooden Board Into the Recess of the Caliper Housing so it is Not Damaged.



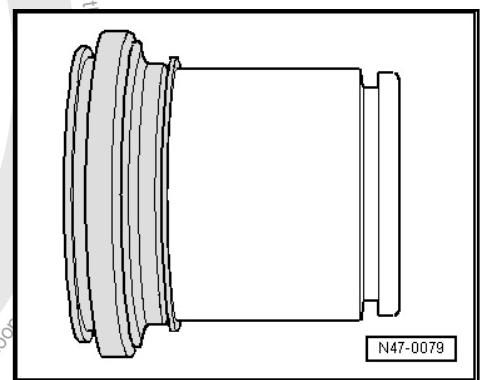
- Remove the sealing ring using the Trim Removal Wedge -3409-.

When removing, make sure that surface of cylinder is not damaged.



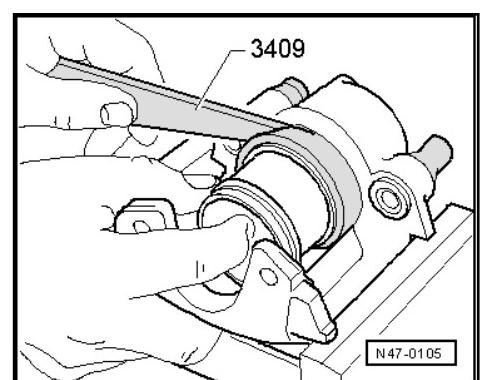
Installing

- The surface of the piston and seal must only be cleaned with mineral spirits and then dried.
- Apply a thin coat of Assembly Paste -G 052 150 A2- on the piston and the seal before installing.
- Install sealing ring in brake caliper.
- Place the cap with the outer sealing lip on the piston.

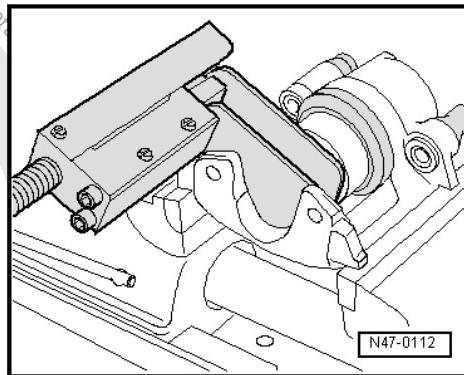


- Insert the inner sealing lip into the cylinder groove using the Trim Removal Wedge -3409-.

Hold piston in front of brake caliper for this procedure.



- Press piston into the brake caliper using the piston resetting tool.



The outer seal lip of the cap thereby slips into the groove on the piston.

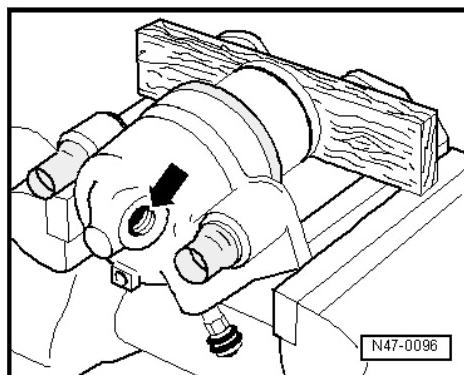
4.1.2 Brake Caliper Piston, FN 3

Special tools and workshop equipment required

- ◆ Trim Removal Wedge -3409-
- ◆ Piston Resetting Tool -T10145-
- ◆ Piston Resetting Tool - Cap /6 -T10146/6

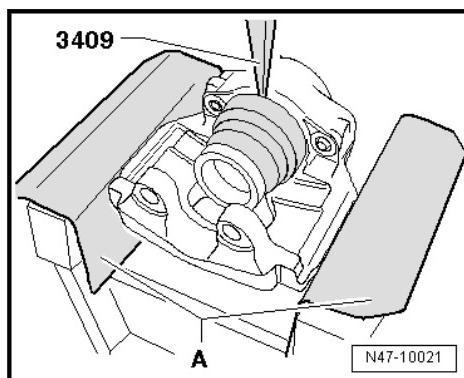
Removing

- Force piston from brake caliper using compressed air
-arrow-.



Place a Wooden Board Into the Recess of the Caliper Housing so it is Not Damaged.

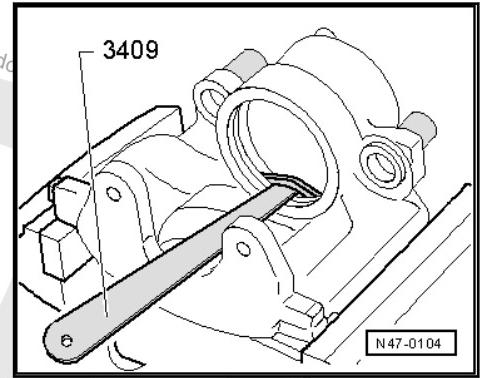
- Remove the cap from the brake caliper using the Trim Removal Wedge -3409-.



- Remove the sealing ring using the Trim Removal Wedge -3409-.

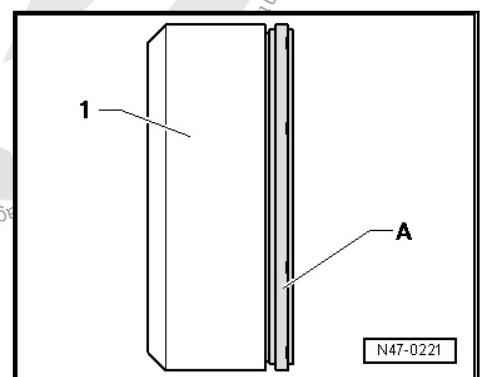


When removing, make sure that surface of cylinder is not damaged.

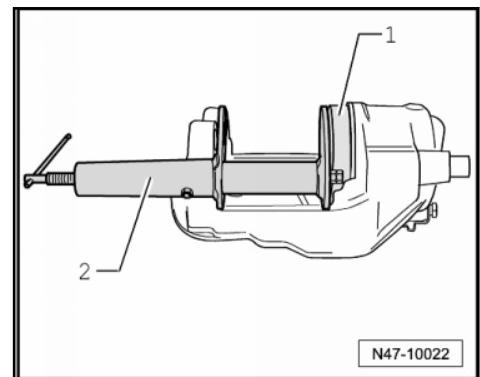


Installing

- The surface of the piston and seal must only be cleaned with mineral spirits and then dried.
- Apply a thin coat of Assembly Paste -G 052 150 A2- on the piston and the seal before installing.
- Install sealing ring in brake caliper.
- Insert the cap -A- into the Piston Resetting Tool - Caps /6 -T10146/6- -1-.

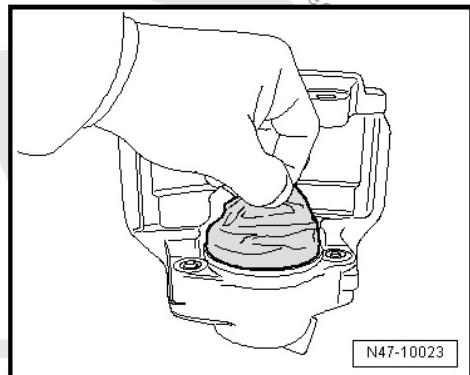


- Place the cap onto the brake caliper using the assembly tool -1- and the Piston Resetting Tool -T10145- -2- so that it is touching the brake caliper all the way around.

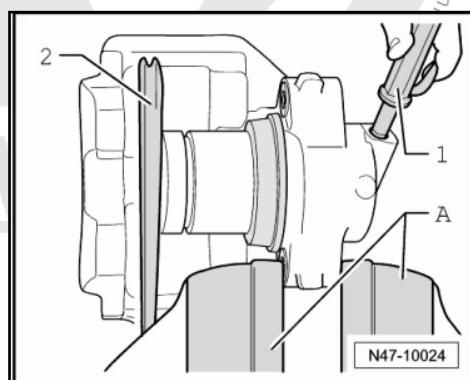




Make Sure the Cap Fits Correctly:



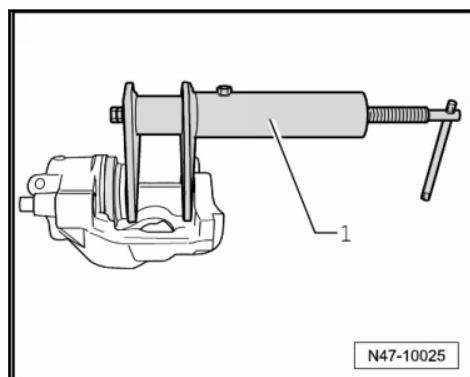
- It must not be possible to pull the cap off the brake caliper by hand.
- Push the piston lightly at the cap and then lock it in this position -2-.



- To do so, use for example the Trim Removal Wedge -3409-.

Do Not Tilt the Piston in Order to Avoid Damaging the Sealing Boot.

- Blow compressed air on the cap (maximum 3 bar (43.5 psi)) -1-. This will force the cap onto the piston.
- Press the piston into the brake caliper using the piston resetting tool -1-.



The outer seal lip of the cap thereby slips into the groove on the piston.



4.2 Rear Brake Caliper Piston

⇒ C4.2.1 aliper Piston, CII 41 TRW", page 165

⇒ C4.2.2 aliper Piston, Bosch", page 166

⇒ C4.2.3 aliper, Pre-Bleeding", page 168

4.2.1 Brake Caliper Piston, CII 41 TRW

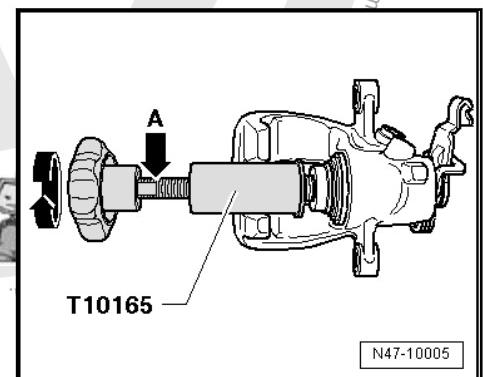
Special tools and workshop equipment required

- ◆ Brake Caliper Tool -T10165-
- ◆ Trim Removal Wedge -3409-

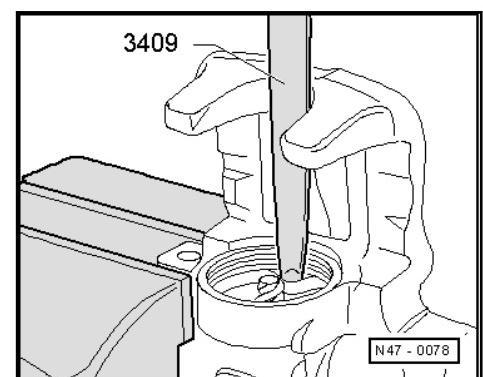
Removing

- Remove piston from brake caliper by turning knurled wheel toward left.

Insert piston compressing and extracting tool so that the collar makes contact on the piston.

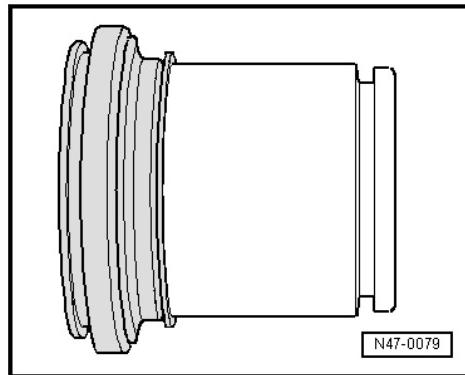


- ◆ For pistons that are difficult to move, an open-end wrench (size 13 mm) can be applied at the appropriate wrench surface -arrow A-.
- Remove the sealing ring using the Trim Removal Wedge -3409-.

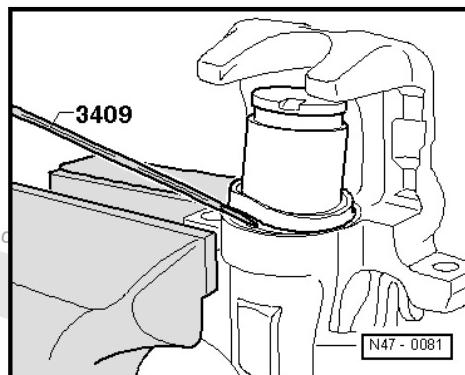


Installing

- The surface of the piston and seal must only be cleaned with mineral spirits and then dried.
- Apply a thin coat of Assembly Paste -G 052 150 A2- on the piston and the seal before installing.
- Place the cap with the outer sealing lip on the piston.

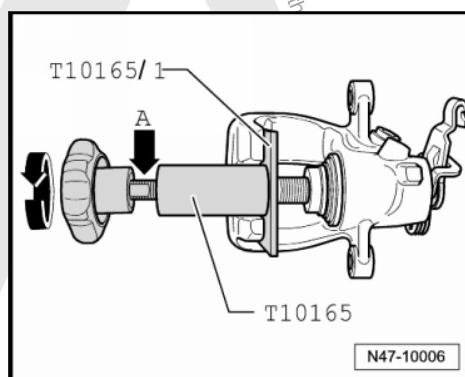


- Insert inner sealing lip in cylinder groove with Trim Removal Wedge -3409-.



Hold piston in front of brake caliper for this procedure.

- Install the piston by turning the thumbwheel toward the right.



- Use the Resetting & Extracting Tool - Plate -T10165/1- to help you bolt it on.
- ◆ Insert the piston compressing and extracting tool so that the collar makes contact on the brake caliper.
- ◆ When the piston is misadjusted using the Piston Resetting Tool -T10145- or if foot brake is pressed, the automatic reset function in the brake caliper is destroyed.

4.2.2 Brake Caliper Piston, Bosch

Special tools and workshop equipment required

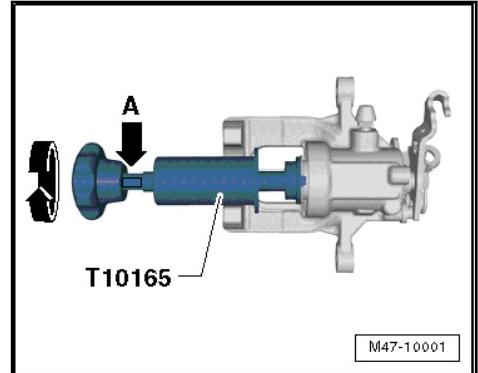
- ◆ Brake Caliper Tool -T10165-
- ◆ Trim Removal Wedge -3409-



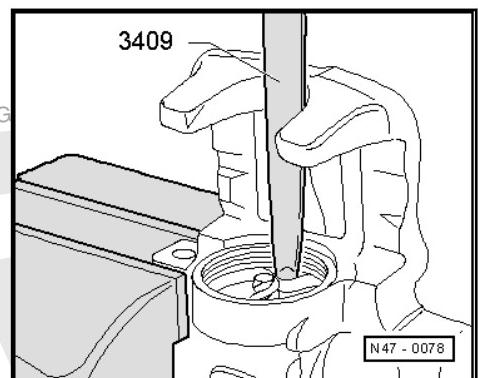
Removing

- Remove piston from brake caliper by turning knurled wheel toward left.

Install the Brake Caliper Tool -T10165- so that the collar touches the piston.

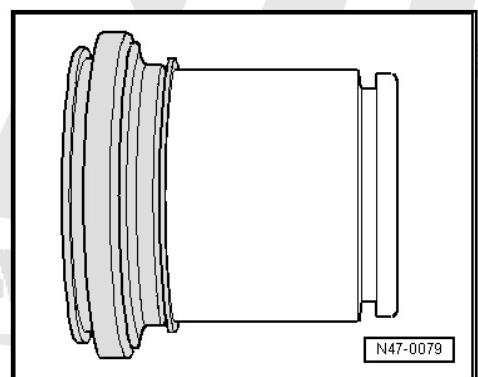


- ◆ For pistons that are difficult to move, an open-end wrench (size 13 mm) can be applied at the appropriate wrench surface -arrow A-.
- Remove the sealing ring using the Trim Removal Wedge -3409-.

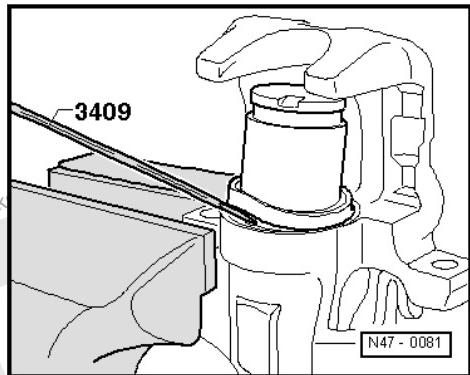


Installing

- The surface of the piston and seal must only be cleaned with mineral spirits and then dried.
- Thinly coat the piston and the seal with Assembly Paste -G 052 150 A2- before installing.
- Place the cap with the outer sealing lip on the piston.

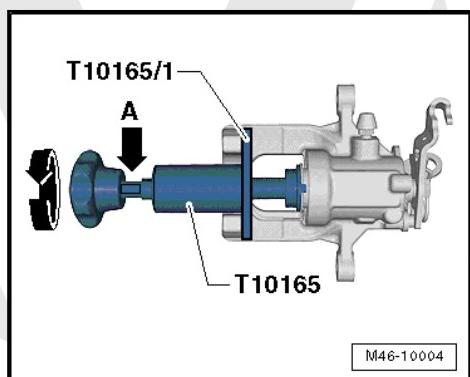


- Insert inner sealing lip in cylinder groove with Trim Removal Wedge -3409-.



Hold piston in front of brake caliper for this procedure.

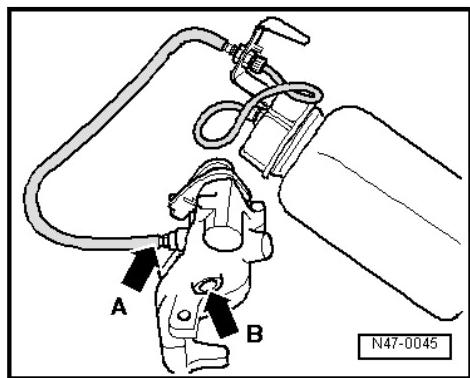
- Install the piston by turning to the right on the thumbwheel of the Brake Caliper Tool -T10165-. Be careful not to damage the cap.



- Use the Resetting & Extracting Tool - Plate -T10165/1- to help you bolt it on.
- ◆ Insert the Brake Caliper Tool -T10165- so that the collar touches the Plate -T10145/1-.
- ◆ When the piston is misadjusted using the Piston Resetting Tool -T10145- or if the brake pedal is pressed, the automatic reset function in the brake caliper is destroyed.

4.2.3 Brake Caliper, Pre-Bleeding

- Open the bleeder valve -arrow A- and using a standard bleeder bottle, fill with brake fluid until brake fluid with no bubbles flows from the threaded hole (brake hose connection) -arrow B-. Close the bleed valve.



Position brake caliper as shown during pre-bleed procedure.



4.3 Brake Lamp Switch -F-

⇒ **B4.3.1 Brake Lamp Switch F, with 5-Cylinder Gasoline Engine", page 169**

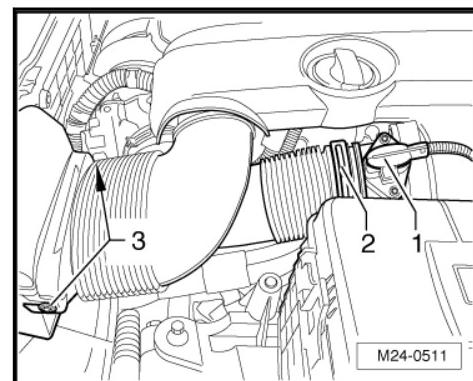
⇒ **B4.3.2 Brake Lamp Switch F, with 4-Cylinder Gasoline Engine", page 170**

⇒ **B4.3.3 Brake Lamp Switch F, with 4-Cylinder Diesel Engine", page 172**

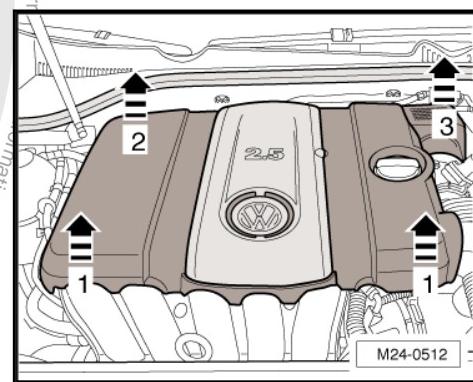
4.3.1 Brake Lamp Switch -F-, with 5-Cylinder Gasoline Engine

Removing

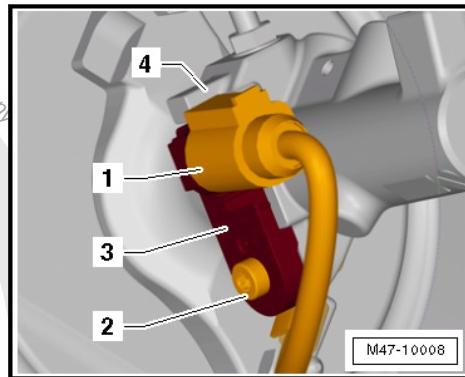
- Open clamp -2- and disconnect intake hose.



- If equipped, disconnect the connector -1- and remove.
- Remove the bolts -3- and the intake hose.
- Pull the engine with a jerk out of the mounts first at the front -arrow 1-, then at the right rear -arrow 2- and finally at the left rear -arrow 3-.



- Carefully swivel engine cover out of rear area.
- Remove the noise insulation or impact guard. Refer to ⇒ Body Exterior; Rep. Gr. 66; Overview - Noise Insulation.
- Release and disconnect the connector -1-.
- Remove the screw -2- from the master brake cylinder.
- Remove the Brake Lamp Switch -3- from under the brake master cylinder and from the clip -4-.



Installing

Installation is the reverse of removal, with special attention to the following:

- Insert the Brake Lamp Switch into the clip.

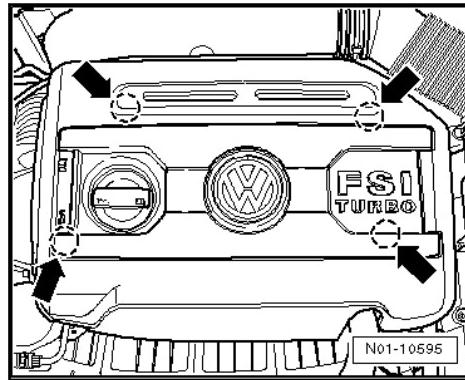
Tightening Specification

Component	Tightening Specification
Bolt to brake master cylinder	5 Nm
Removing and installing	Refer to ⇒ Rep. Gr. 24; Air Filter; Overview - Air Filter Housing.

4.3.2 Brake Lamp Switch -F-, with 4-Cylinder Gasoline Engine

Removing

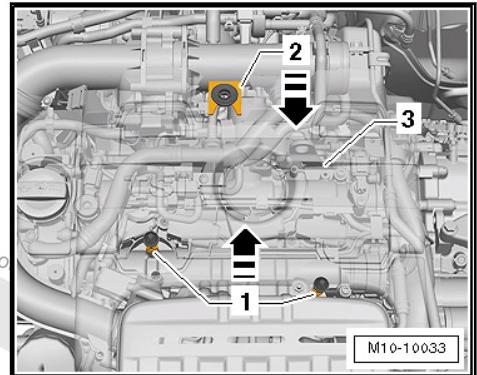
Vehicles with 2.0 L Gasoline Engine and Turbocharger:



- Remove the engine cover upward from the attaching points –arrows-. Refer to ⇒ Rep. Gr. 10; Engine Cover, Engine Cover, Removing and Installing.

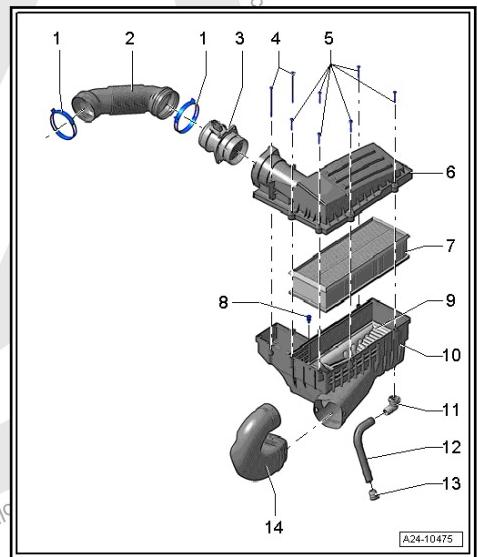


Vehicles with 1.4L Gasoline Engine, Turbocharger and Compressor:



- Lift engine cover -3- upward at points -1- in direction of -arrow-.
- Pull cover out of bracket -2- in direction of -arrow-.

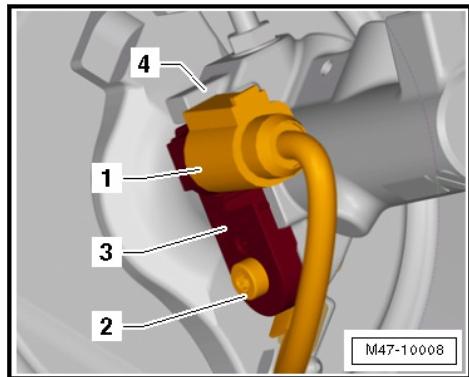
Continuation for Both Engines:



- Remove the intake hose -2-. Refer to ⇒ Rep. Gr. 24; Air Filter; Air Filter Housing, Assembly Overview.
- To do this, loosen clamps -1-.
- Seal the openings with the Engine Bung Set -VAS6122-.

Continuation for All Vehicles:

- Remove the noise insulation or impact guard. Refer to ⇒ Body Exterior; Rep. Gr. 66; Overview - Noise Insulation.
- Release and disconnect the connector -1-.



- Remove the screw -2- from the master brake cylinder.
- Remove the Brake Lamp Switch -3- from under the brake master cylinder and from the clip -4-.

Installing

Installation is the reverse of removal, with special attention to the following:

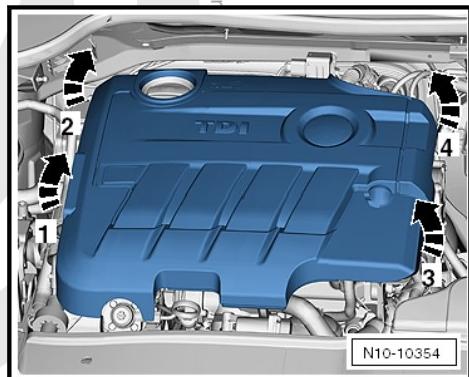
- Insert the Brake Lamp Switch into the clip.

Tightening Specification

Component	Tightening Specification
Bolt to brake master cylinder	5 Nm
removing and installing	Refer to ⇒ Rep. Gr. 24; Air Filter; Overview - Air Filter Housing.

4.3.3 Brake Lamp Switch -F-, with 4-Cylinder Diesel Engine

Removing



- Remove engine cover near in direction of -arrows-.
- Observe the given sequence -1 through 4-.
- Reach under the engine cover as far as possible.

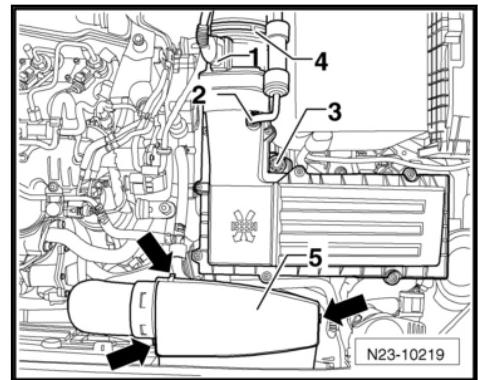


Caution

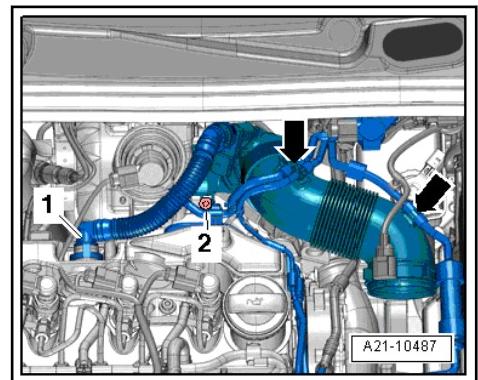
The engine cover bracket on the cylinder head cover can break if it is removed incorrectly. Always remove the engine cover according to the following procedure.



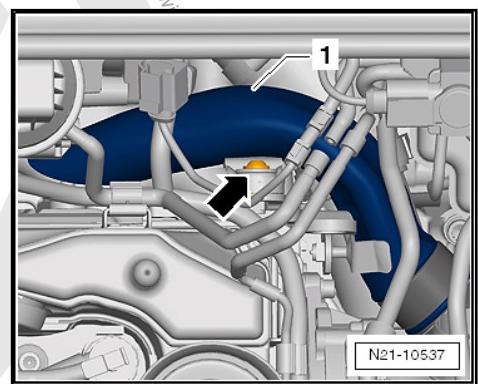
- Loosen the hose clamp -4-.



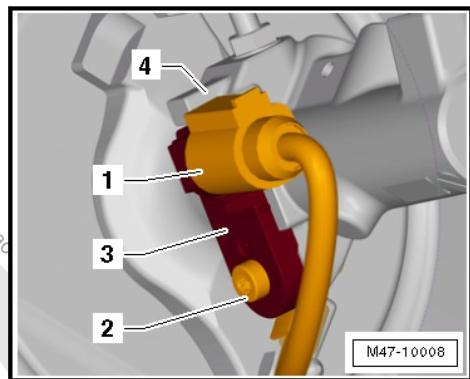
- Press the release buttons and remove the crankshaft housing ventilation hose -1- from the cylinder head cover.



- Disconnect the connector from the crankcase housing ventilation hose -1-.
- Free up the vacuum hoses -arrow-.
- Remove the bolt -2-.
- Turn the air guide pipe to the rear and remove it.
- If equipped, remove bolt -arrow-.



- Unclip and remove the pre-heater pipe -1- from the bracket.
- Release and disconnect the connector -1-.
- Remove the screw -2- from the master brake cylinder.
- Remove the Brake Lamp Switch -3- from under the brake master cylinder and from the clip -4-.



Installing:

Installation is the reverse of removal, with special attention to the following:

- Insert the Brake Lamp Switch into the clip.

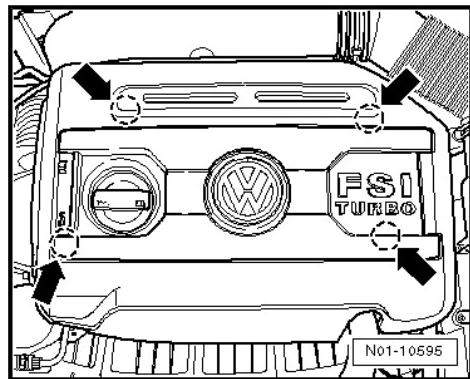
Tightening Specification

Component	Tightening Specification
Bolt to brake master cylinder	5 Nm
Diesel engine	Refer to ⇒ Rep. Gr. 23; Air Filter; Overview - Air Filter Housing.

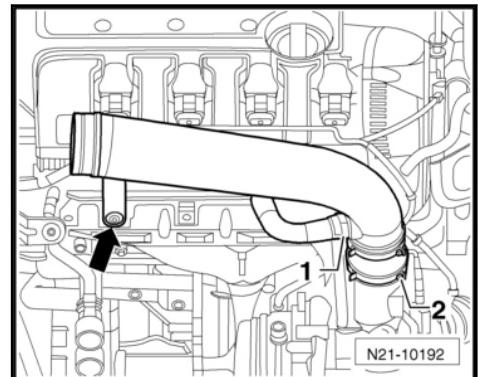
4.3.4 Brake Lamp Switch -F-, Removing and Installing, RHD with Gasoline Engine

Removing

Vehicles with 2.0L gasoline engine and turbocharger

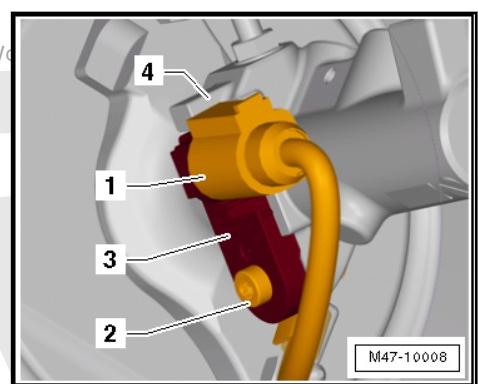


- Remove the engine cover upward from the attaching points -arrows-. Refer to ⇒ Rep. Gr. 10; Engine Cover, Engine Cover, Removing and Installing.
- Open the clamp and remove the air guide hose from the air filter. Refer to ⇒ Rep. Gr. 24; Air Filter; Overview - Air Filter Housing.
- Press the release button to remove the air guide hose -1-.



- Remove the air guide hose -1- and move it aside.
- Remove the air guide pipe bolt -arrow-.
- Remove the air guide pipe; to do this, loosen the hose clamp -2-.
- Remove the intake hose between the intake hose and the turbocharger.
- Seal the turbocharger with the Engine Bung Set -VAS6122-.

Continuation for all vehicles



- Release and disconnect the connector -1-.
- Remove the screw -2- from the master brake cylinder.
- Remove the Brake Lamp Switch -3- from under the brake master cylinder and from the clip -4-.

Installing:

Installation is the reverse of removal, with special attention to the following:

- Insert the Brake Lamp Switch into the clip.

Tightening specification

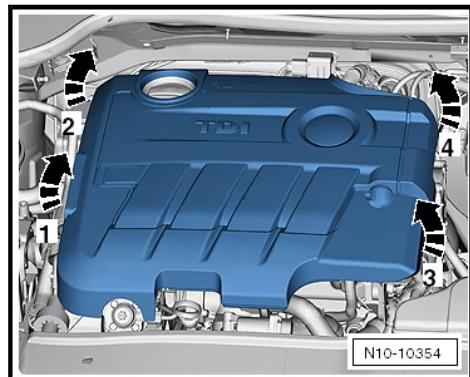
Component	Tightening specification
Bolt to brake master cylinder	5 Nm
Engine Cover	Refer to ⇒ Rep. Gr. 10; Engine Cover; Engine Cover, Removing and Installing.
Air Guide	Refer to ⇒ Rep. Gr. 24; Air Filter; Overview - Air Filter Housing.



4.3.5 Brake Lamp Switch -F-, Removing and Installing, RHD with Diesel Engine

Removing

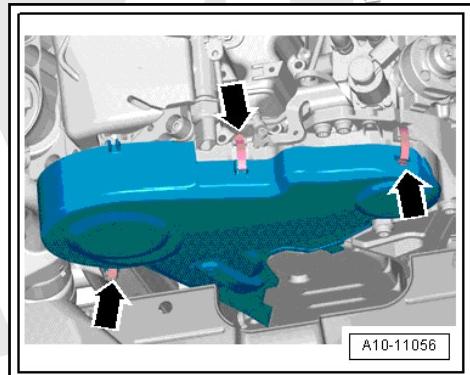
Vehicles with a diesel engine



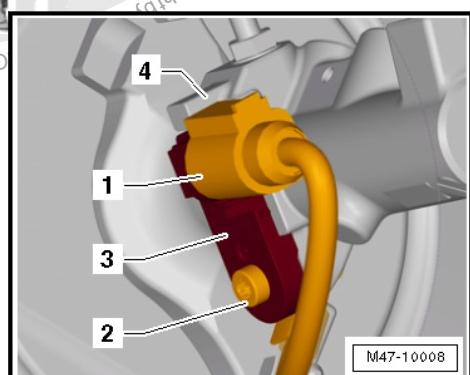
Caution

The engine cover bracket on the cylinder head cover can break if it is removed incorrectly. Always remove the engine cover according to the following procedure.

- Pull the engine cover -arrows- upward out of the fasteners in the given sequence.
- Reach under the engine cover as far as possible.
- If necessary, remove the toothed belt guard and the clips -arrows-.



- Release and disconnect the connector -1-.





- Remove the screw -2- from the master brake cylinder.
- Remove the Brake Lamp Switch -3- from under the brake master cylinder and from the clip -4-.

Installing:

Installation is the reverse of removal, with special attention to the following:

- Insert the Brake Lamp Switch into the clip.

Tightening specification

Component	Tightening specification
Bolt to brake master cylinder	5 Nm
Engine Cover	Refer to ⇒ Rep. Gr. 10; Engine Cover; Engine Cover, Removing and Installing.

4.4 Brake Fluid Reservoir

⇒ F4.4.1 "Brake Fluid Reservoir", page 177

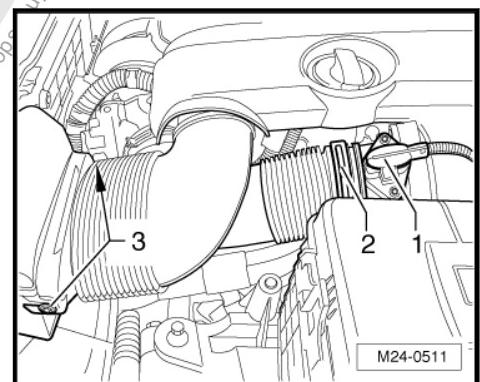
4.4.1 Brake Fluid Reservoir

Special tools and workshop equipment required

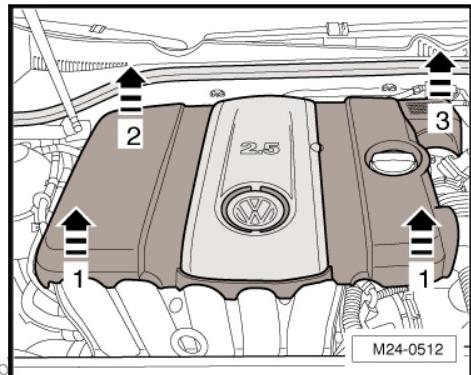
- ◆ Sealing Tool -T10249-
- ◆ Torque Wrench 1331 5-50Nm -VAG1331-
- ◆ Brake Charger/Bleeder Unit -VAS5234-
- ◆ Engine Bung Set -VAS6122-

Removing

Vehicles with 5-Cylinder Gasoline Engine

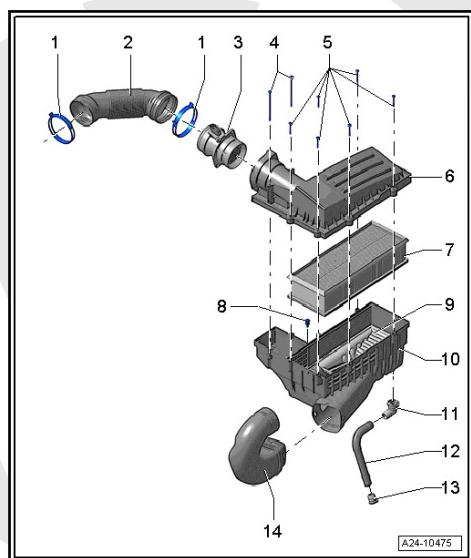


- Open clamp -2- and disconnect intake hose.
- If equipped, disconnect the connector -1- and remove.
- Remove the bolts -3- and the intake hose.
- Pull the engine with a jerk out of the mounts first at the front in direction of -arrow 1-, then at the right rear in direction of -arrow 2- and finally at the left rear in direction of -arrow 3-.



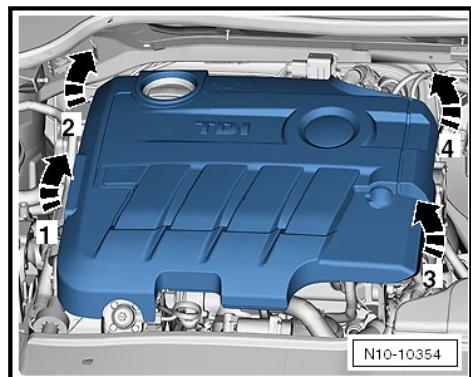
- Carefully swivel engine cover out of rear area.

Vehicles with 4-Cylinder Gasoline Engine



- Remove the engine cover. Refer to ⇒ Rep. Gr. 10; Engine Cover; Engine Cover, Removing and Installing.
- If necessary, remove the intake hose -2-. Refer to ⇒ Rep. Gr. 24; Air Filter; Overview - Air Filter Housing.
- To do this, loosen clamps -1-.
- Seal the openings with the Engine Bung Set -VAS6122-.

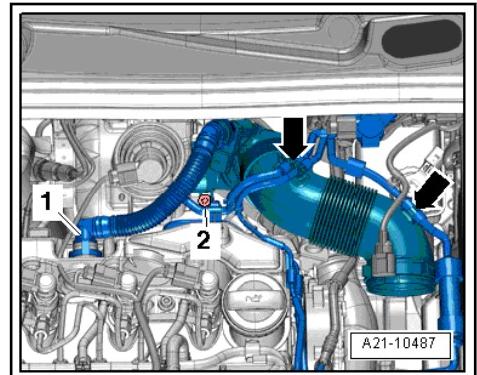
Vehicles with a 4-Cylinder Diesel Engine



- Remove engine cover near -arrows-.
- Observe the given sequence -1- through -4-.

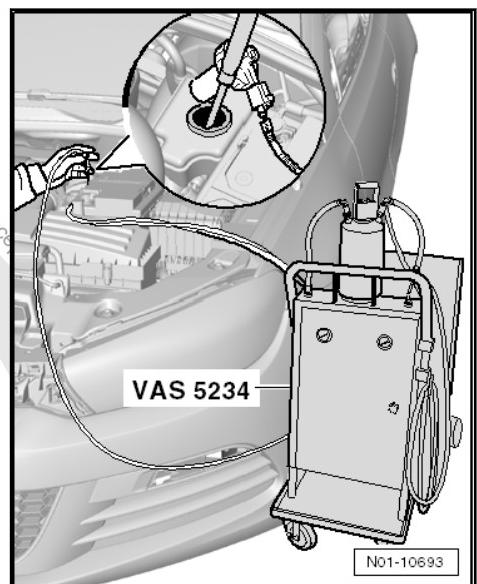


- Reach as far as possible under the engine cover.
- Press the release buttons and remove the crankshaft housing ventilation hose -1- from the cylinder head cover.



- Disconnect the connector from the crankcase housing ventilation hose -1-.
- Free up the vacuum hoses -arrow-.
- Remove the bolt -2-.
- Turn the air guide pipe to the rear and remove it.
- Seal the openings with the Engine Bung Set -VAS6122-.

Continuation for All Vehicles



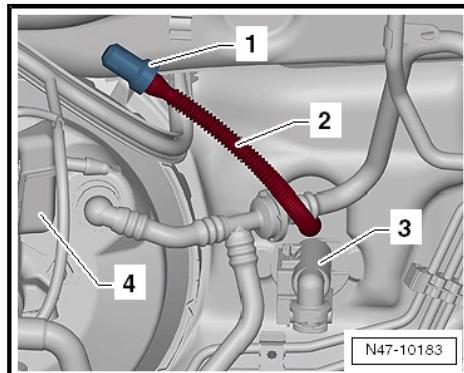
- Place sufficient lint-free cloths in the area of the engine and transmission.
- Extract as much brake fluid as possible from the brake fluid reservoir using Brake Charger/Bleeder Unit -VAS5234-.



WARNING

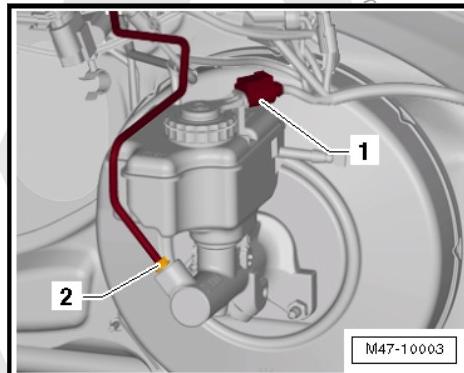
- ◆ *Brake fluid must never come into contact with fluids containing mineral oils (oil, gas, cleaning solutions). Mineral oil damages the plugs and sleeves in the brake system.*
- ◆ *Brake fluid is poisonous. NEVER siphon brake fluid with your mouth! Also due to its corrosive effect, brake fluid must not come into contact with paintwork.*
- ◆ *Extract brake fluid cannot be used again.*
- ◆ *Observe the disposal regulations.*

Vehicles with a Manual Transmission:



- Remove the supply hose -2- for the clutch master cylinder -3- from the brake fluid reservoir -4-.
- Seal the supply hose -2- for the clutch master cylinder -3- using Sealing Tool -T10249- -1- or Engine Bung Set -VAS6122-.
- Seal off the supply hose -2-.

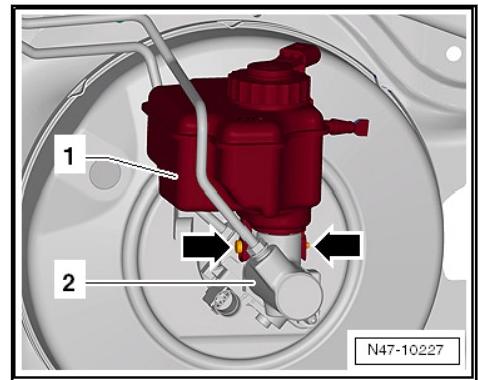
Continuation for All Vehicles:



- Disconnect the connector -1- from the Brake Fluid Level Warning Switch -F34-.
- Remove the brake line tube fitting -2-.
- Close the brake line with Plugs -1H0 698 311 A-



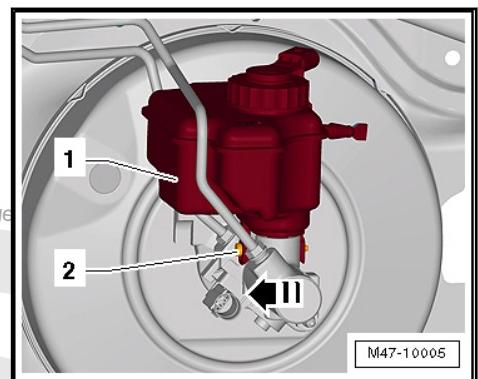
Vehicles with Retaining Tabs on the Brake Master Cylinder



- Release the brake fluid reservoir -1- at the retaining tabs -arrows- on the brake master cylinder -2-.
- To do so, carefully press the mounting tabs outward.
- Carefully pull the brake fluid reservoir -1- out of the plugs.

Vehicles with Securing Pin

- Remove the securing pin -2- in the direction of -arrow-.
- Carefully remove the brake fluid reservoir -1- from the plugs.



Installing

Installation is the reverse of removal, with special attention to the following:

Coat the plugs with brake fluid before pushing the brake fluid reservoir into the master brake cylinder.

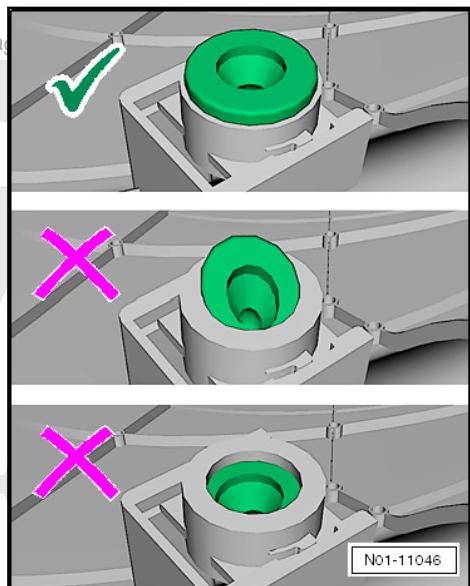
- Bleed the brake system. Refer to [⇒ S1.3 System, Bleeding](#), [page 132](#).

Vehicles with a Manual Transmission:

- Bleed the clutch. Refer to [⇒ Rep. Gr. 30; Clutch Mechanism; Clutch Mechanism, Bleeding](#).



Continuation for All Vehicles:



- Make sure the rubber buffers fit correctly in the mounts when installing the engine cover.



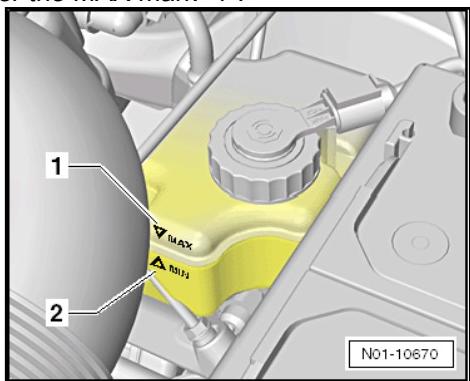
Caution

Before installing the engine cover, make sure the 4 mounting elements (ball sockets) are correctly positioned; adjust them if necessary. Otherwise the engine cover will get damaged.



Note

To prevent the brake fluid from overflowing from the reservoir, the level must not be over the MAX mark -1-.



4.4.2 Brake Fluid Reservoir, Removing and Installing, RHD



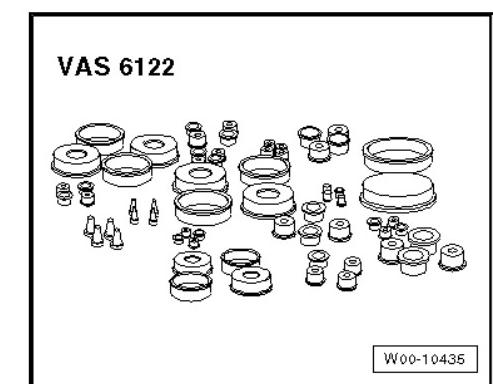
Special tools and workshop equipment required

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T10249		V.A.G 1331
VAS 5234		

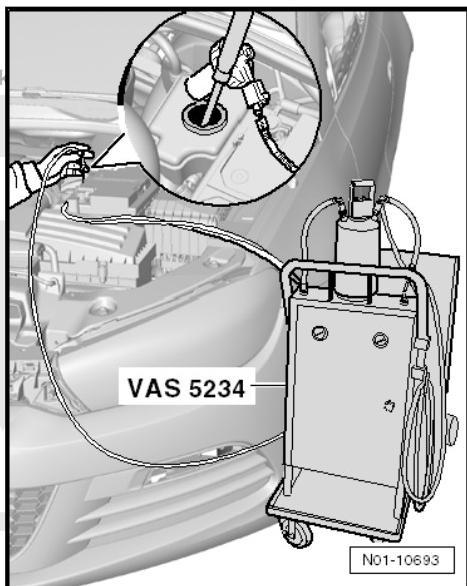
W47-10006

- ◆ Sealing Tool -T10249-
- ◆ Torque Wrench 1331 5-50Nm -VAG1331-
- ◆ Brake Charger/Bleeder Unit -VAS5234-
- ◆ Engine Bung Set -VAS6122-





Removing



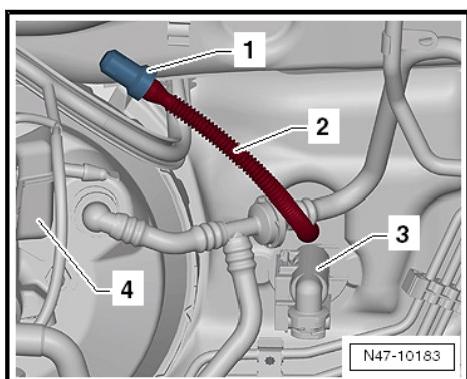
- Place sufficient lint-free cloths in the area of the engine and transmission.
- Extract as much brake fluid as possible from the brake fluid reservoir using Brake Charger/Bleeder Unit -VAS5234-.



WARNING

- ◆ **Brake fluid must never come into contact with fluids containing mineral oils (oil, gas, cleaning solutions). Mineral oil damages the plugs and sleeves in the brake system.**
- ◆ **Brake fluid is poisonous. NEVER siphon brake fluid with your mouth! Also due to its corrosive effect, brake fluid must not come into contact with paintwork.**
- ◆ **Extract brake fluid cannot be used again.**
- ◆ **Observe the disposal regulations.**

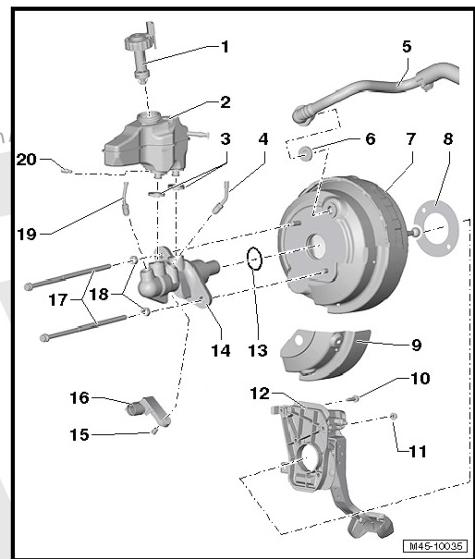
Vehicles with a manual transmission:



- Remove the supply hose -2- for the clutch master cylinder -3- from the brake fluid reservoir -4-.
- Seal the supply hose -2- for the clutch master cylinder -3- using Sealing Tool -T10249- -1- or Engine Bung Set -VAS6122-.
- Seal off the supply hose -2-.



Continuation for all vehicles:



- Remove master brake cylinder -14-. Refer to [⇒ M4.5 aster Cylinder](#), page 186 .
- Remove the bolt -20-.
- Carefully remove the brake fluid reservoir -2- from the plug.

Installing

Installation is the reverse of removal, with special attention to the following:

Coat the plugs with brake fluid before pushing the brake fluid reservoir into the master brake cylinder.

- Bleed the brake system. Refer to [⇒ S1.3 ystem, Bleeding](#), page 132 .

Vehicles with a manual transmission:

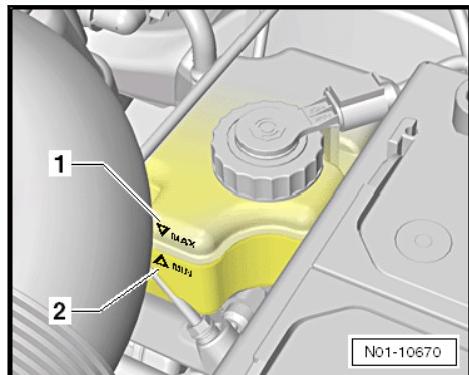
- Bleed the clutch. Refer to ⇒ Rep. Gr. 30; Clutch Mechanism; Clutch Mechanism, Bleeding.

Continuation for all vehicles:



Note

To prevent the brake fluid from overflowing from the reservoir, the level must not be over the MAX mark -1-.





Tightening specification

Component	Tightening specification
Brake master cylinder to brake booster ◆ Use new nuts	50 Nm
◆	14 Nm
Brake lines to brake master cylinder	
Bolt for the brake fluid reservoir	4 Nm

4.5 Brake Master Cylinder

⇒ M4.5.1 "Master Cylinder", page 186

4.5.1 Brake Master Cylinder

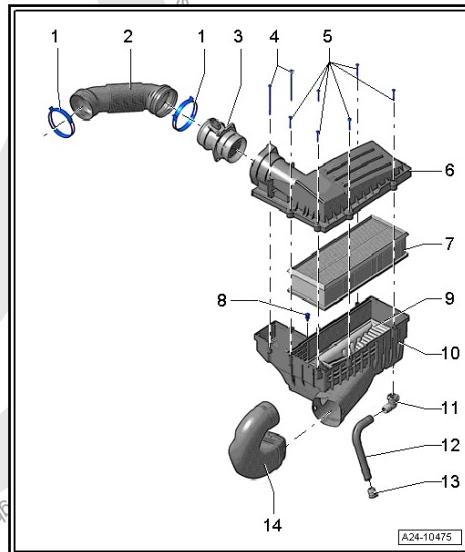
Special tools and workshop equipment required

- ◆ Sealing Tool -T10249-
- ◆ Torque Wrench 1331 5-50Nm -VAG1331-
- ◆ Brake Charger/Bleeder Unit -VAS5234-

Removing

- Remove the engine cover. Refer to ⇒ Rep. Gr. 10; Engine Cover; Engine Cover, Removing and Installing.
- Remove the battery. Refer to ⇒ Electrical Equipment; Rep. Gr. 27; Battery, Removing and Installing.

Vehicles with a Gasoline Engine



- Remove the air filter. Refer to ⇒ Rep. Gr. 24; Air Filter; Overview - Air Filter Housing.
- If necessary, remove the intake hose -2-. Refer to ⇒ Rep. Gr. 24; Air Filter; Overview - Air Filter Housing.
- To do this, loosen clamps -1-.
- Seal the openings with the Engine Bung Set -VAS6122-.

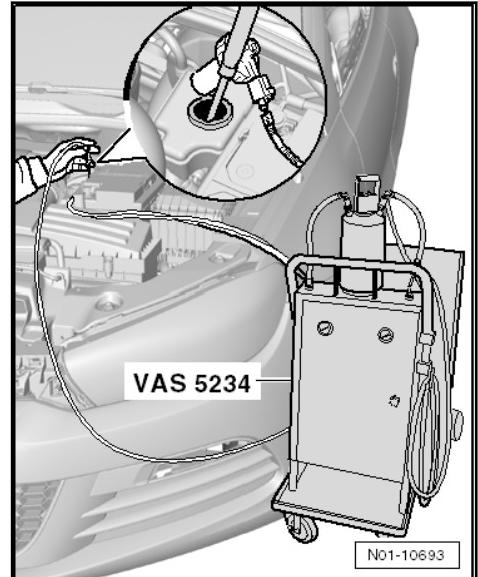
Vehicles with a Diesel Engine

- Remove the air filter. Refer to ⇒ Rep. Gr. 23; Air Filter; Overview - Air Filter Housing.



- If necessary, remove the intake hose -2-. Refer to ⇒ Rep. Gr. 23; Air Filter; Overview - Air Filter Housing.
- To do this, loosen clamps -1-.
- Seal the openings with the Engine Bung Set -VAS6122-.

Continuation for All Vehicles



- Remove the battery tray. Refer to ⇒ Electrical Equipment; Rep. Gr. 27; Battery; Battery Tray, Removing and Installing.
- Place sufficient lint-free cloths in the area of the engine and transmission.
- Extract as much brake fluid as possible from the brake fluid reservoir using Brake Charger/Bleeder Unit -VAS5234-



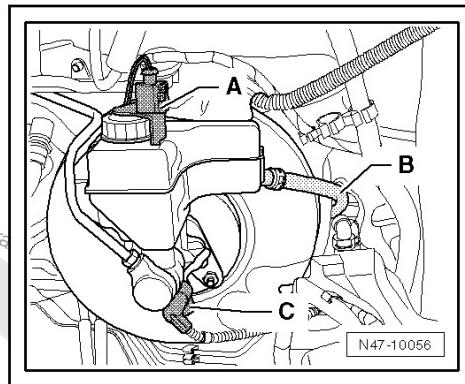
WARNING

- ◆ *Brake fluid must never come into contact with fluids containing mineral oils (oil, gas, cleaning solutions). Mineral oil damages the plugs and sleeves in the brake system.*
- ◆ *Brake fluid is poisonous. NEVER siphon brake fluid with your mouth! Also due to its corrosive effect, brake fluid must not come into contact with paintwork.*
- ◆ *Extract brake fluid cannot be used again.*
- ◆ *Observe the disposal regulations.*

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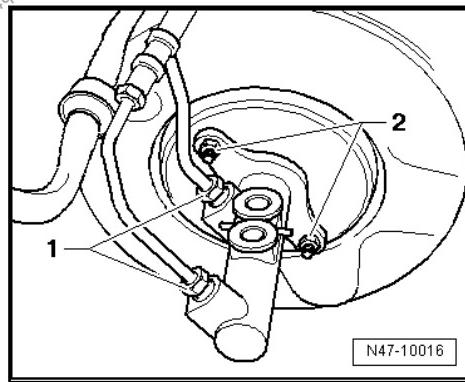
Vehicles with a Manual Transmission



- Clamp the clutch master cylinder supply hose -B- with Hose Clamps - Up To 25mm -3094-.
- Remove the clutch master cylinder supply hose -B-.

Continuation for All Vehicles

- Release and disconnect the connector -A- from the Brake Fluid Level Warning Switch -F34- -2-.
- Release and remove the connector -C- from the Brake Lamp Switch -E-.
- Remove the brake fluid reservoir. Refer to [⇒ F4.4 luid Reservoir](#), page 177 .
- Disconnect the brake lines -1- from the brake master cylinder and seal the brake lines with Plugs -1H0 698 311 A-.
- Remove the nuts -2- from the brake master cylinder.
- Remove the heat shield, if equipped.
- Carefully take brake master cylinder out of brake booster.



Installing

Installation is the reverse of removal, with special attention to the following:

- When installing together the brake master cylinder and brake booster, make sure that the push rod is correctly located in the brake master cylinder.
- Install and connect the battery. Refer to ⇒ Electrical Equipment; Rep. Gr. 27.
- Bleed the brake system. Refer to [⇒ S1.3 ystem, Bleeding](#), page 132 .

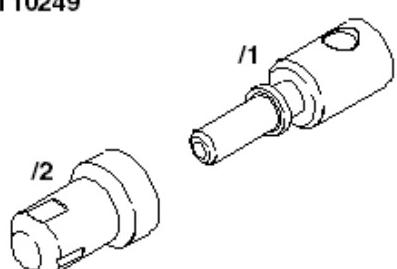


Tightening Specifications

Component	Tightening Specification
Brake master cylinder to brake booster ◆ Use new nuts!	25 Nm
Brake lines to brake master cylinder	14 Nm
Battery tray to the body	20 Nm

4.5.2 Brake Master Cylinder, Removing and Installing, RHD with Diesel Engine

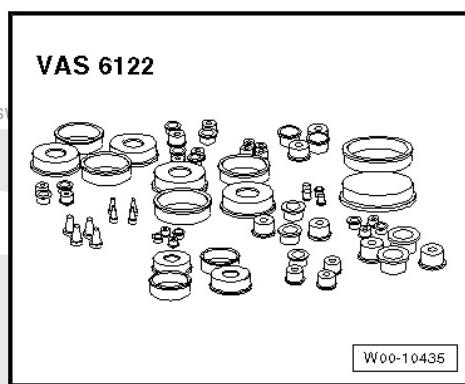
Special tools and workshop equipment required

 T10249	 V.A.G 1331
 VAS 5234	
	W47-10006

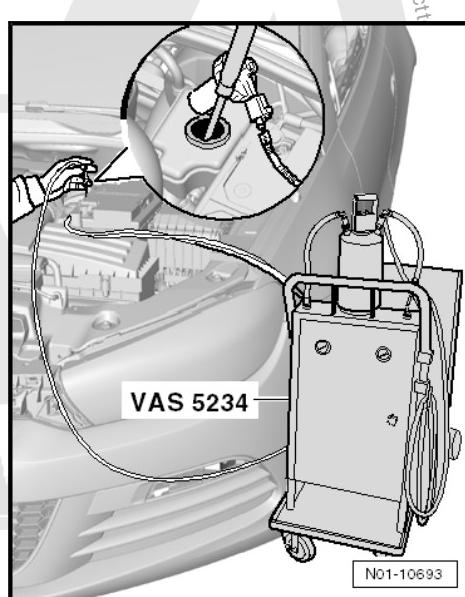
- ◆ Sealing Tool -T10249-
- ◆ Torque Wrench 1331 5-50Nm -VAG1331-
- ◆ Brake Charger/Bleeder Unit -VAS5234-



- ◆ Engine Bung Set -VAS6122-



Removing



WARNING

For all repair work, especially in the engine compartment due to the tight working conditions, observe the following:

- ◆ *Route all lines and wires in their original locations.*
- ◆ *Ensure sufficient clearance to all moving or hot components.*

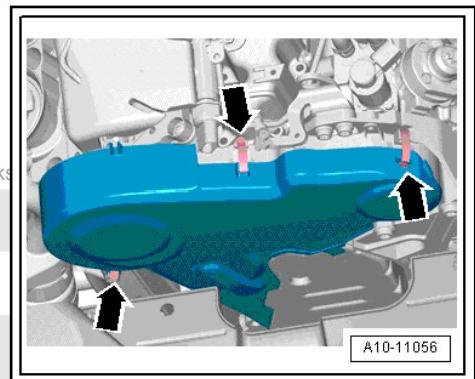
- Place sufficient lint-free cloths in the area of the engine and transmission.
- Extract as much brake fluid as possible from the brake fluid reservoir using Brake Charger/Bleeder Unit -VAS5234-.



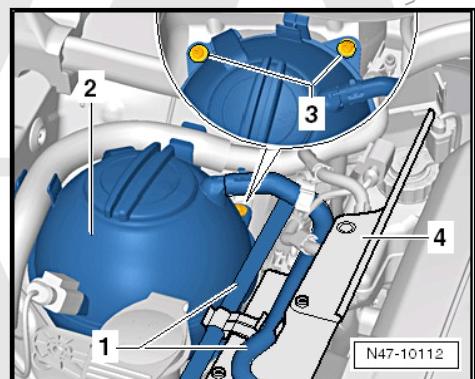
WARNING

- ◆ Brake fluid must never come into contact with fluids containing mineral oils (oil, gas, cleaning solutions). Mineral oil damages the plugs and sleeves in the brake system.
- ◆ Brake fluid is poisonous. NEVER siphon brake fluid with your mouth! Also due to its corrosive effect, brake fluid must not come into contact with paintwork.
- ◆ Extract brake fluid cannot be used again.
- ◆ Observe the disposal regulations.

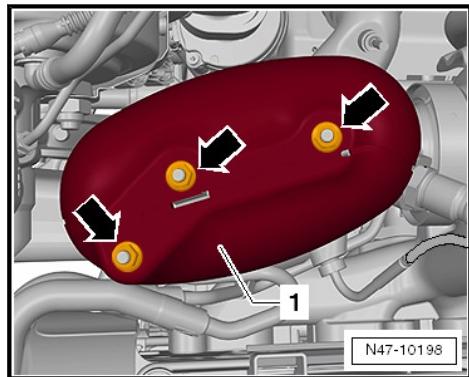
- Remove the engine cover. Refer to ⇒ Rep. Gr. 10; Engine Cover; Engine Cover, Removing and Installing.
- Open the clips -arrows- and remove the upper toothed belt cover.



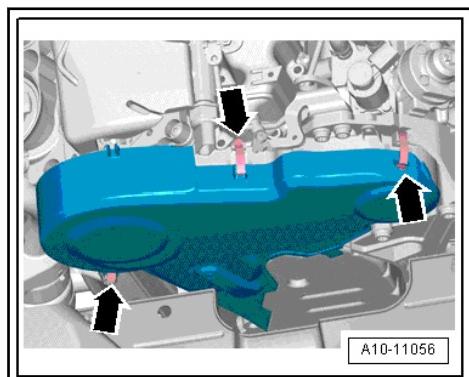
- Remove the lines -1-.



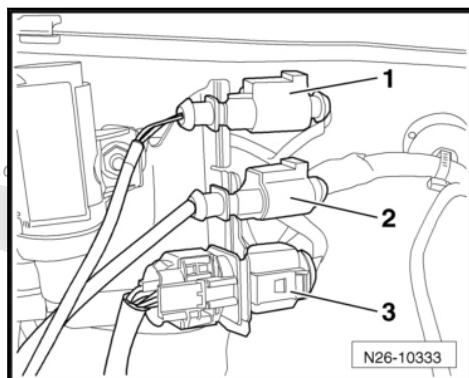
- Remove the screws -3- and move the coolant reservoir -2- to the side.
- Remove the Auxiliary Fuel Pump -V393-. Refer to ⇒ Rep. Gr. 20; Fuel Supply System, Servicing; Auxiliary Fuel Pump -V393- (Inline Fuel Pump).
- Remove the nuts -arrows- and then remove the heat shield -1- from the diesel particulate filter.



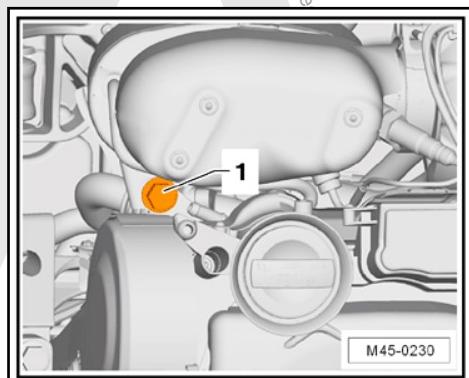
- Open the clips -arrows- and remove the upper toothed belt cover.



- Release and remove connectors -1- through -3-.



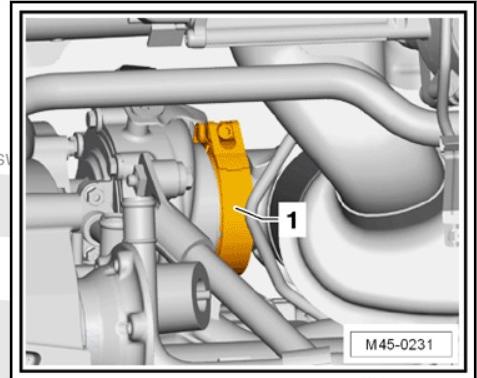
- Remove the particulate filter mount bolts -1-.



- Loosen the clamps and remove the hoses from the particulate filter. Refer to ⇒ Rep. Gr. 26; Overview - Emissions Control.



- Raise the vehicle.
- Remove the noise insulation. Refer to ⇒ Body Exterior; Rep. Gr. 50; Noise Insulation; Overview - Noise Insulation.
- Loosen the clamp -1- for the turbocharger/particulate filter connection and remove it.



Note

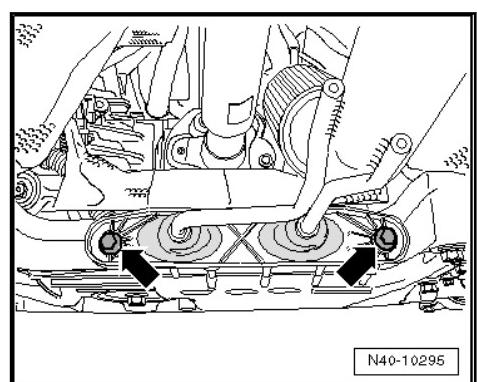
The illustration shows the clamp screw -1- from underneath. In some cases, this can be installed from the top.

Vehicles with absorption catalytic converter

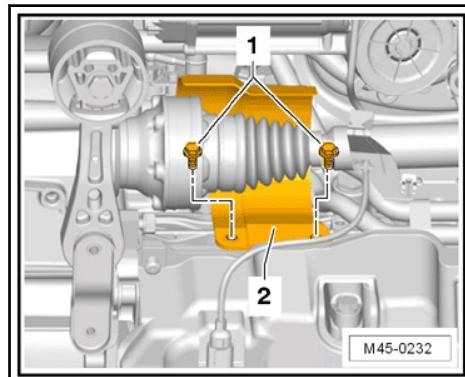
- Disconnect the exhaust system between the particulate filter and the absorption catalytic converter. Refer to ⇒ Rep. Gr. 26; Overview - Emissions Control.
- Disconnect the exhaust system after the absorption catalytic converter. Refer to ⇒ Rep. Gr. 26; Overview - Emissions Control.

Continuation for all vehicles

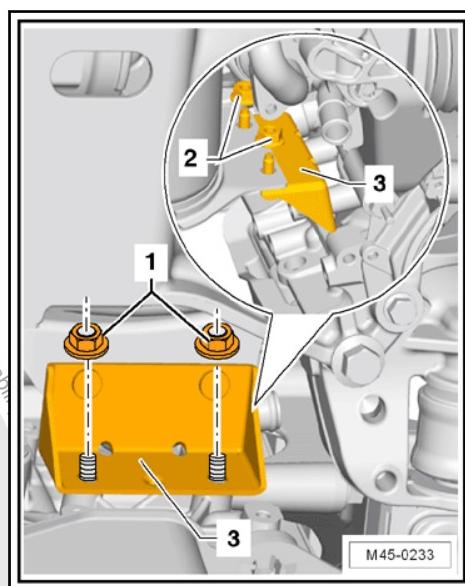
- If equipped, remove the EGR pipe from the particulate filter. Refer to ⇒ Rep. Gr. 26; Overview - Emissions Control.
- Disconnect the exhaust system. Refer to ⇒ Rep. Gr. 26; Exhaust Pipes/Mufflers; Overview - Muffler.
- Remove the exhaust system bracket from the subframe -arrows-.



- Remove the bolts -1- and remove the drive shaft cover-2-.



- Remove the right driveshaft from the flange, lay it down and secure it. Refer to ⇒ Suspension, Wheels, Steering; Rep. Gr. 40; Driveshaft; Driveshaft, Removing and Installing.
- Remove the nuts -1-.



- Remove the nuts -2- using the Wrench - Sw13 -T10384-.
- Remove bracket for particulate filter -3-.

Close all openings using the Engine Bung Set -VAS6122-.

Lower the particulate filter just enough so that it touches the steering gear.

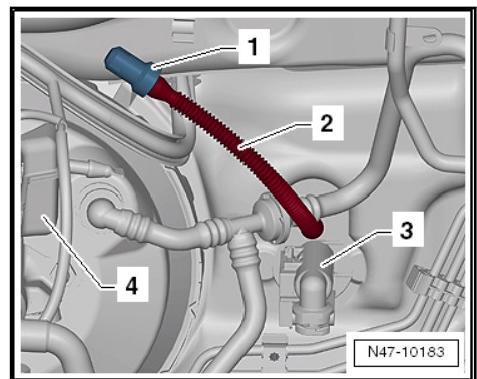
Note

- ◆ When lowering, pay attention to the electrical cable to prevent any damage.
- ◆ Pay attention to the Exhaust Gas Temperature Sensor and the Heated Oxygen Sensor to prevent any damage.

- Seal the turbocharger using the Engine Bung Set - VAS6122-.



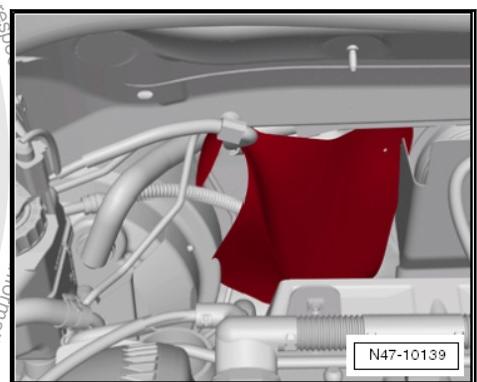
Vehicles with a manual transmission:



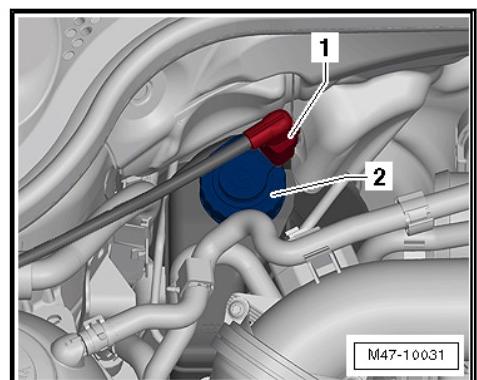
- Remove the supply hose -2- for the clutch master cylinder -3- from the brake fluid reservoir -4-.
- Seal the supply hose -2- for the clutch master cylinder -3- using Sealing Tool -T10249- -1- or Engine Bung Set -VAS6122-.

Seal off the supply hose -2-.

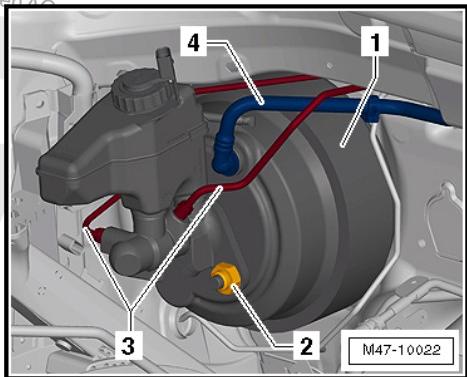
Continuation for all vehicles



- Remove the heat shield and move it to the side.
- Disconnect the connector -1- from the Brake Fluid Level Warning Switch -F34- -2-.



- Remove brake lines -3- on the master brake cylinder -1-.



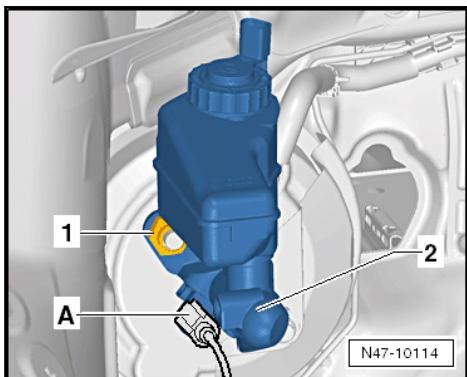
M47-10022



Caution

- Brake lines must not be bent.**
Do not confuse the brake lines when connecting them.
Mark the lines in their installed position before removing them.

- Seal off the brake lines with the plugs from the Repair Kit -1H0 698 311 A-.
- Remove the nut -2-.
- Remove the heat shield, if equipped.
- Release and remove the connector -A- from the Brake/Lamp Switch -F-.



N47-10114

- Remove the nut -1- from the brake master cylinder -2-.
- Carefully take brake master cylinder -2- out of brake booster.

Installing

Installation is the reverse of removal, with special attention to the following:

- When installing together the brake master cylinder and brake booster, make sure that the push rod is correctly located in the brake master cylinder.
- Make sure the seal fits correctly when attaching the master brake cylinder to the brake booster -item 6- ⇒ [Item 6 \(page 146\)](#) .
- Bleed the brake system. Refer to ⇒ [S1.3 ystem, Bleeding](#), [page 132](#) .



Vehicles with a manual transmission:

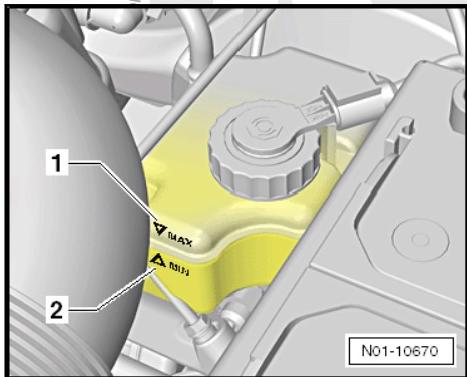
- Bleed the clutch. Refer to ⇒ Rep. Gr. 30; Clutch Mechanism; Clutch Mechanism, Bleeding.

Continuation for all vehicles:



Note

To prevent the brake fluid from overflowing from the reservoir, the level must not be over the MAX mark -1-.



Tightening specification

Component	Tightening specification
Brake booster to pedal assembly/bulk-head ◆ Use new bolts.	25 Nm
Brake master cylinder to brake booster ◆	50 Nm
Brake lines to brake master cylinder	14 Nm
Engine Cover	Refer to ⇒ Rep. Gr. 10; Engine Cover; Engine Cover, Removing and Installing.
Driveshaft	Refer to ⇒ Suspension, Wheels, Steering; Rep. Gr. 40; Driveshaft; Driveshaft Assembly Overview.
Exhaust pipe	Refer to ⇒ Rep. Gr. 26; Exhaust Pipes/Mufflers; Overview - Muffler.
Particulate Filter	Refer to ⇒ Rep. Gr. 26; Overview - Emissions Control.

4.5.3 Brake Master Cylinder, Removing and Installing, RHD with Gasoline Engine

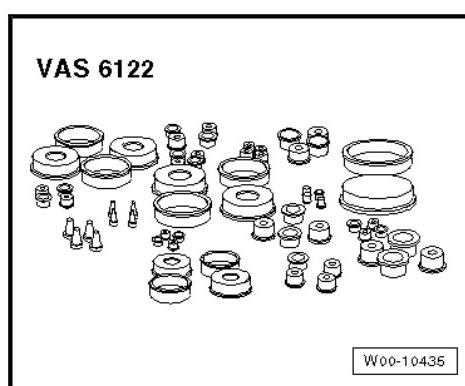


Special tools and workshop equipment required

Using of protected by copyright material or commercial purposes, in part or in whole, is not permitted without permission of the copyright holders.

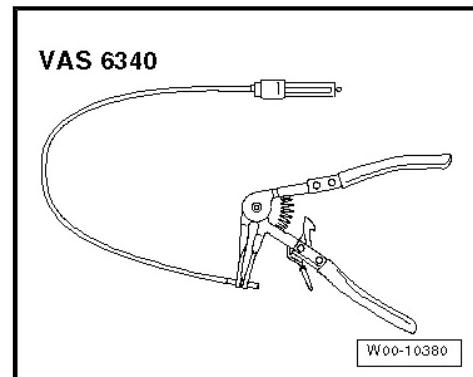
T10249	The image shows two components of the sealing tool. Component /1 is a long cylindrical tube with a flared end. Component /2 is a smaller, flared cylindrical component.	V.A.G 1331	The image shows a torque wrench with a long handle and a ratchet mechanism at the front.
VAS 5234	The image shows a large, mobile unit mounted on wheels, which is a brake charger/bleeder unit.		

- ◆ Sealing Tool -T10249-
- ◆ Torque Wrench 1331 5-50Nm -VAG1331-
- ◆ Brake Charger/Bleeder Unit -VAS5234-
- ◆ Engine Bung Set -VAS6122-

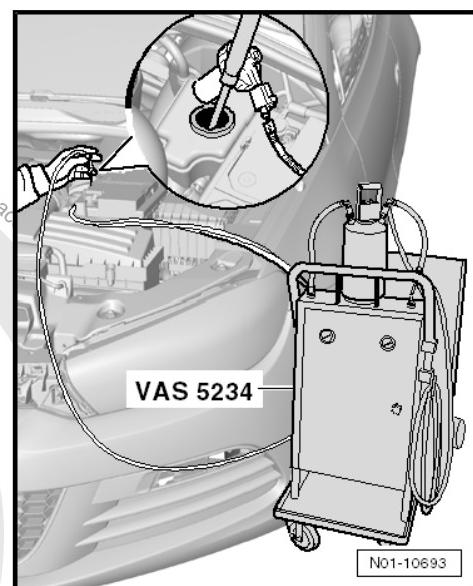




- ◆ Hose Clip Pliers -VAS6340-



Removing



- Place sufficient lint-free cloths in the area of the engine and transmission.
- Extract as much brake fluid as possible from the brake fluid reservoir using Brake Charger/Bleeder Unit -VAS5234-.

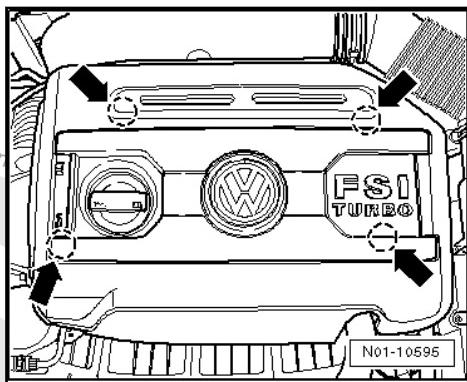


WARNING

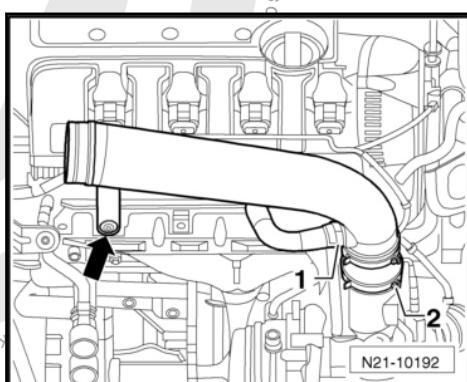
- ◆ **Brake fluid must never come into contact with fluids containing mineral oils (oil, gas, cleaning solutions). Mineral oil damages the plugs and sleeves in the brake system.**
- ◆ **Brake fluid is poisonous. NEVER siphon brake fluid with your mouth! Also due to its corrosive effect, brake fluid must not come into contact with paintwork.**
- ◆ **Extract brake fluid cannot be used again.**
- ◆ **Observe the disposal regulations.**



Vehicles with 2.0L gasoline engine and turbocharger

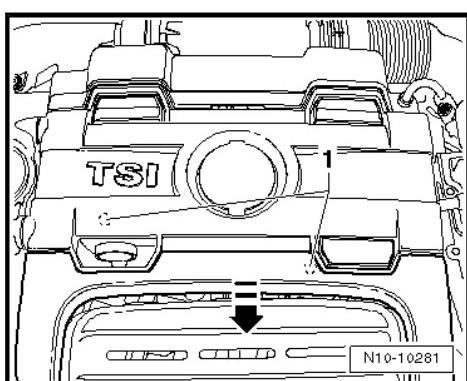


- Remove the engine cover upward from the attaching points -arrows-. Refer to ⇒ Rep. Gr. 10; Engine Cover, Engine Cover, Removing and Installing.
- Open the clamp and remove the air guide hose from the air filter. Refer to ⇒ Rep. Gr. 24; Air Filter; Overview - Air Filter Housing.
- Press the release button to remove the air guide hose -1-.



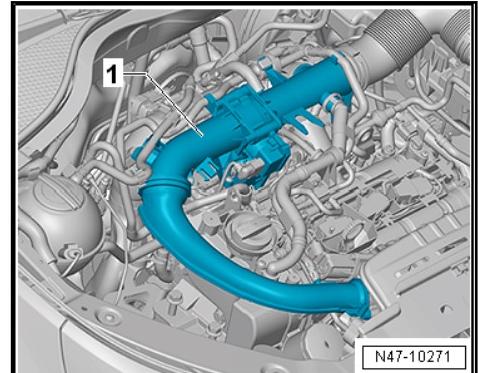
- Remove the air guide hose -1- and move it aside.
- Remove the air guide pipe bolt -arrow-.
- Remove the air guide pipe; to do this, loosen the hose clamp -2-.
- Remove the intake hose between the intake hose and the turbocharger.
- Seal the turbocharger with the Engine Bung Set -VAS6122-.

Vehicles with 1.4L gasoline engine, turbocharger and compressor:

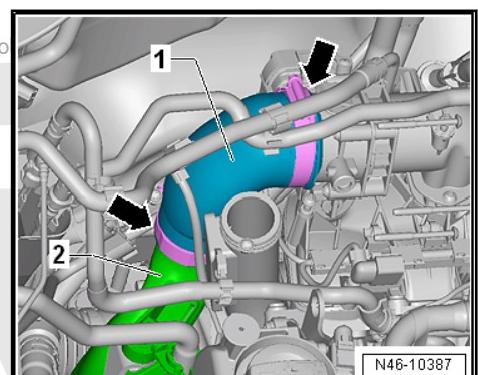




- Lift the engine cover at the points -1- and pull it forward in the -direction of the arrow-. Refer to => Rep. Gr. 10; Engine Cover; Engine Cover, Removing and Installing.
- Remove the pressure pipe -1- with the Control Valve Control Unit -J808- and Throttle Valve Control Module -J338-. Refer to => Rep. Gr. 24; Intake Manifold; Control Valve Control Unit -J808- and Throttle Valve Control Module -J338-, Removing and Installing.

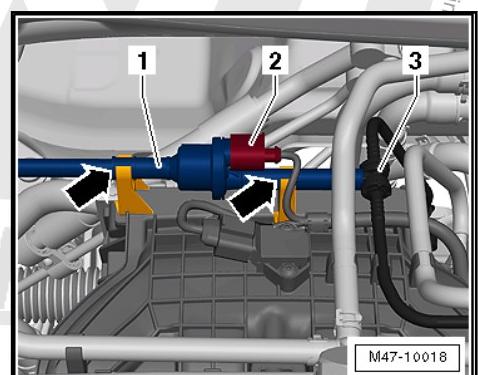


- Loosen the clamps -arrows-.



- Remove the charge air hose -1- between the Throttle Valve Control Module -J338- and the charge air pipe -2-. Refer to => Rep. Gr. 21; Overview - Charge Air System.
- Seal the openings using the Engine Bung Set -VAS6122-.

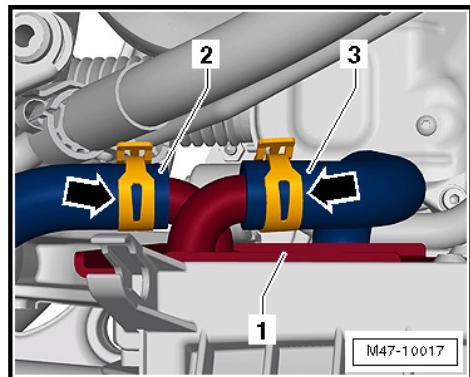
Vehicles with 1.4L 90 kW gasoline engine with turbocharger



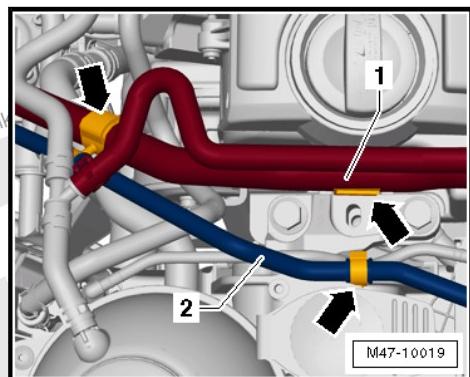
- Drain the coolant. Refer to => Rep. Gr. 19; Coolant System/Coolant; Coolant, Draining and Filling.
- Disengage connector -2- at wire -1- and remove.
- Unclip wire -1- at intake manifold from brackets -arrows-.



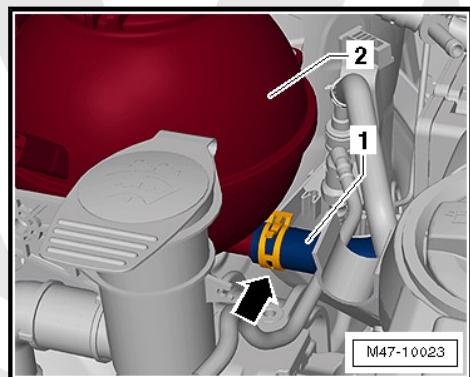
- Remove wire -1- at coupling point -3-.
- Remove coolant hose -2- at charge air cooler -1-.



- To do this, open clamp -arrow-.
- Unclip wire -2- and coolant hoses -1- from brackets -arrows-.



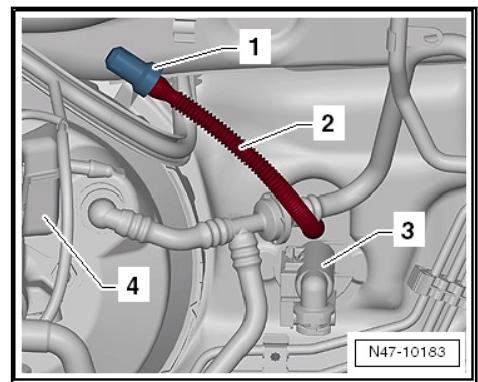
- Set wire -2- and coolant hose -1- aside.
- Remove coolant hose -1- at coolant reservoir -2-.



- To do this, open clamp -arrow-.
- Move the coolant hoses to the side.

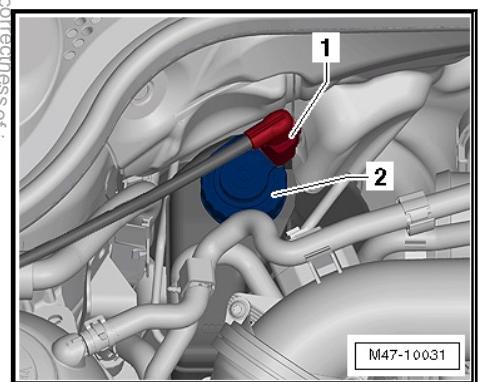


Vehicles with a manual transmission:

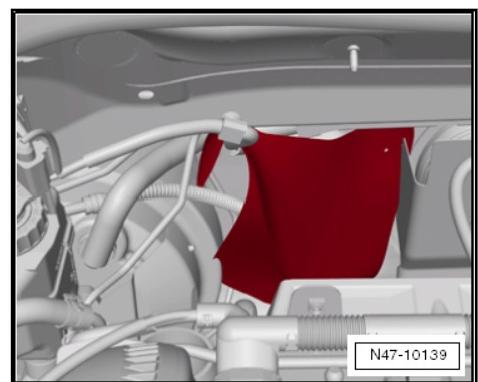


- Remove the supply hose -2- for the clutch master cylinder -3- from the brake fluid reservoir -4-.
- Seal the supply hose -2- for the clutch master cylinder -3- using Sealing Tool -T10249- -1- or Engine Bung Set -VAS6122-.
- Seal off the supply hose -2-.

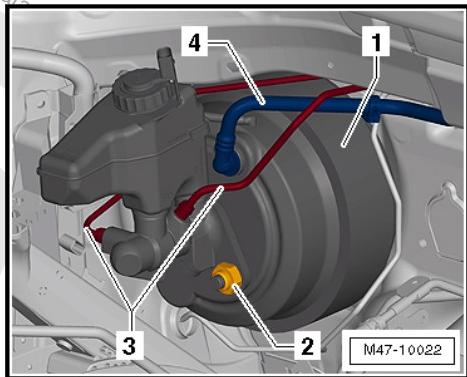
Continuation for all vehicles:



- Disconnect the connector -1- from the Brake Fluid Level Warning Switch -F34- -2-.
- Remove the heat shield and move it to the side.



- Remove brake lines -3- on the master brake cylinder -1-.



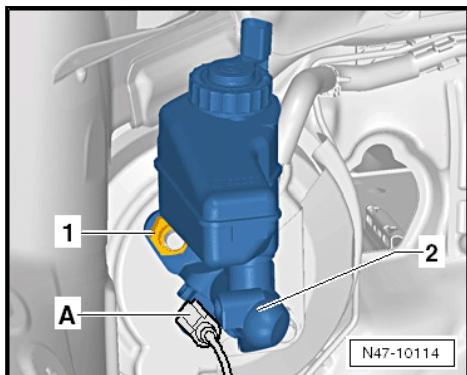
Caution

Brake lines must not be bent.

Do not confuse the brake lines when connecting them.

Mark the lines in their installed position before removing them.

- Seal off the brake lines with the plugs from the Repair Kit -1H0 698 311 A-.
- Remove the nut -2-.
- Remove the heat shield, if equipped.
- Release and remove the connector -A- from the Brake Lamp Switch -F-.



- Remove the nut -1- from the brake master cylinder -2-.
- Carefully take brake master cylinder -2- out of brake booster.

Installing

Installation is the reverse of removal, with special attention to the following:

- When installing together the brake master cylinder and brake booster, make sure that the push rod is correctly located in the brake master cylinder.
- Make sure the seal fits correctly when attaching the master brake cylinder to the brake booster -item 6- ⇒ [Item 6 \(page 146\)](#) .
- Clip the brake pedal to the brake booster. Refer to [P2.7 edal, Attaching to Brake Booster](#), page 120 .



- Bleed the brake system. Refer to ⇒ [S1.3 ystem, Bleeding](#), page 132 .

Vehicles with a manual transmission:

- Bleed the clutch. Refer to ⇒ Rep. Gr. 30; Clutch Mechanism; Clutch Mechanism, Bleeding.

Vehicles with 1.4L 90 kW gasoline engine with turbocharger

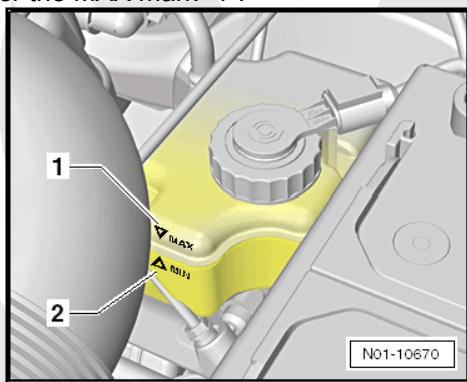
- Check the coolant level. Refer to ⇒ Rep. Gr. 19; Coolant System/Coolant; Coolant, Draining and Filling.

Continuation for all vehicles:



Note

To prevent the brake fluid from overflowing from the reservoir, the level must not be over the MAX mark -1-.



Tightening specification

Component	Tightening specification
Brake booster to pedal assembly/bulk-head ◆ Use new bolts.	25 Nm
Brake master cylinder to brake booster ◆	50 Nm
Brake lines to brake master cylinder	14 Nm
Charge Air System	Refer to ⇒ Rep. Gr. 21; Overview - Charge Air System.
Engine Cover	Refer to ⇒ Rep. Gr. 10; Engine Cover; Engine Cover, Removing and Installing.
Air Filter	Refer to ⇒ Rep. Gr. 24; Air Filter; Overview - Air Filter Housing.
Intake Manifold	Refer to ⇒ Rep. Gr. 24; Overview - Intake Manifold.
Coolant system	Refer to ⇒ Rep. Gr. 19; Cooling System/Coolant; Coolant Hoses Connection Diagram.

4.6 Brake Booster

[⇒ B4.6.1 ooster](#), page 205

4.6.1 Brake Booster

Special tools and workshop equipment required

- ◆ Hose Clamps - Up To 25mm -3094-
- ◆ Torque Wrench 1331 5-50Nm -VAG1331-



- ◆ Brake Charge and Bleed Equipment -VAG1869-
- ◆ Brake Charge and Bleed Equipment - Upgrade Kit - VAG1869/4-
- ◆ Brake Charger/Bleeder Unit -VAS5234-
- ◆ Hose Clamps - Up To 40mm -3093-
- If the vehicle has a coded radio, get the radio code from the customer before beginning.
- Place sufficient lint-free cloths in the area of the engine and transmission.
- Extract as much brake fluid as possible from the brake fluid reservoir using the Brake Charger/Bleeder Unit -VASS5234- or Brake Charge and Bleed Equipment - Upgrade Kit - VAG1869/4-.
- Remove the engine cover. Refer to ⇒ Rep. Gr. 10; Engine Cover; Engine Cover, Removing and Installing.
- Remove the battery. Refer to ⇒ Electrical Equipment; Rep. Gr. 27; Battery, Removing and Installing.

Vehicles with a Gasoline Engine

- Remove the air filter. Refer to ⇒ Rep. Gr. 24; Air Filter; Overview - Air Filter Housing.
- If necessary, remove the intake hose. Refer to ⇒ Rep. Gr. 24; Air Filter; Overview - Air Filter Housing.

Vehicles with a Diesel Engine

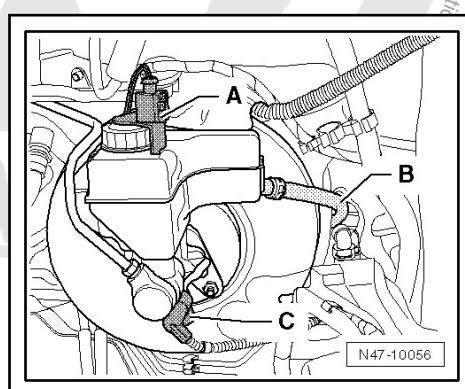
- Remove the air filter. Refer to ⇒ Rep. Gr. 23; Air Filter; Overview - Air Filter Housing.
- If necessary, remove the intake hose. Refer to ⇒ Rep. Gr. 23; Air Filter; Overview - Air Filter Housing.

Continuation for All Vehicles

- Remove the battery tray. Refer to ⇒ Electrical Equipment; Rep. Gr. 27; Battery; Battery Tray, Removing and Installing.

Vehicles with a Manual Transmission

- Clamp off the clutch master cylinder supply hose -B- using the Hose Clamps - Up To 25mm-3094-.
- Remove the clutch master cylinder supply hose -B-.

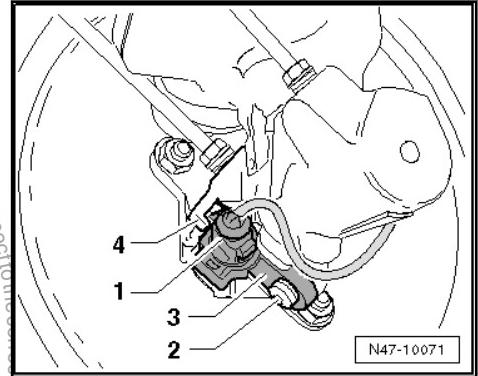


Continuation for All Vehicles

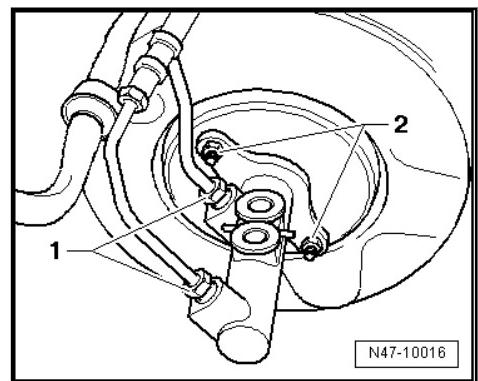
- Disconnect the connector -A- from the brake fluid level warning switch.
- Remove the connector -C- from Brake Lamp Switch -F-.



- Release and remove the connector -1- from the Brake Lamp Switch -F-



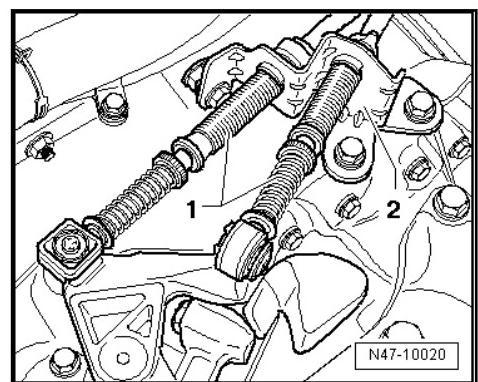
- Remove the brake fluid reservoir. Refer to ⇒ [F4.4 Liquid Reservoir](#), page 177 .
- At the same time, pull the brake fluid reservoir out of the sealing plugs.



- Disconnect the brake lines -1- from the brake master cylinder and seal the brake lines with Plugs -1H0 698 311 A-.
- Remove the nuts -2- from the brake master cylinder.
- Remove the heat shield, if equipped.
- Carefully take brake master cylinder out of brake booster.
- Remove the vacuum hose from the brake booster.

Vehicles with a Manual Transmission

- Loosen the cables -1-, remove the cable bracket -2- and move it to the side. Refer to ⇒ Rep. Gr. 34; Shift Mechanism, Servicing.



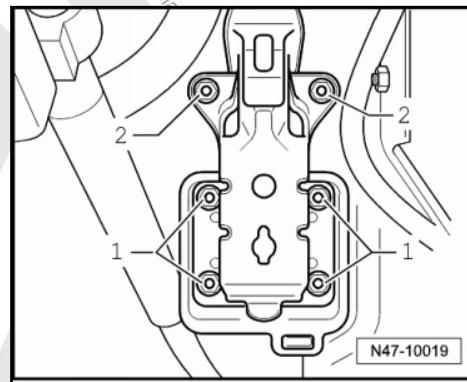


For Vehicles with a 7-speed DSG Transmission

- Remove the selector lever cable from the ball head and the cable bracket. Refer to ⇒ 7-Speed DSG Transmission 0AM; Rep. Gr. 34; Shift Mechanism.
- Remove the selector lever from the gearshift shaft on the transmission. Refer to ⇒ 7-Speed DSG Transmission 0AM; Rep. Gr. 34

Continuation for All Vehicles

- Remove the driver side footwell cover. Refer to ⇒ Body Interior; Rep. Gr. 68; Compartments, Covers and Trim.
- Disconnect brake pedal from brake booster. Refer to ⇒ [P2.6 edal, Removing from Brake Booster](#), page 119.
- Remove the nuts 1- from the brake booster.



- Carefully remove the brake booster from the vehicle.
- Remove both nuts -2- from the bracket if the brake booster gets caught in the holes.

Installing

- Install in reverse order of removal.

Note the following points when installing:

- Clip brake pedal together with brake booster. Refer to ⇒ [page 120](#)
- Install and connect the battery. Refer to ⇒ Electrical Equipment; Rep. Gr. 27.
- After installing, bleed the brake system (Refer to ⇒ [S1.3 ys-tem, Bleeding](#), page 132) and the clutch (Refer to ⇒ Rep. Gr. 34).

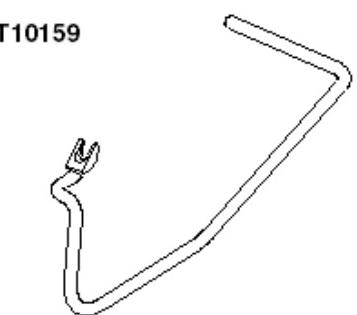
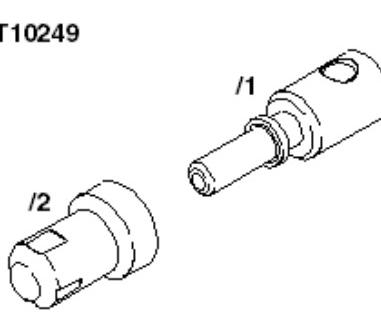
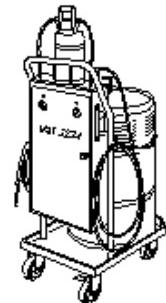
Tightening Specifications

Component	Tightening Specification
Brake booster to pedal assembly/bulkhead ◆ Use new nuts!	25 Nm
Brake master cylinder to brake booster ◆ Use new nuts!	25 Nm
Brake lines to brake master cylinder	14 Nm
Battery tray to the body	20 Nm



4.6.2 Brake Booster, Removing and Installing, RHD with 4-Cylinder Gasoline Engine

Special tools and workshop equipment required

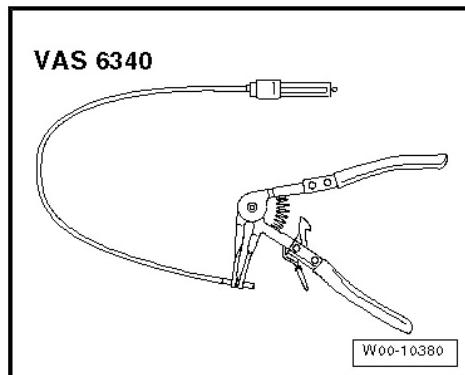
	 T10159	 T10249 /1 /2
Use of commercial purposes, in part or in whole, is not permitted.	 V.A.G 1331	 VAS 5234

W47-10005

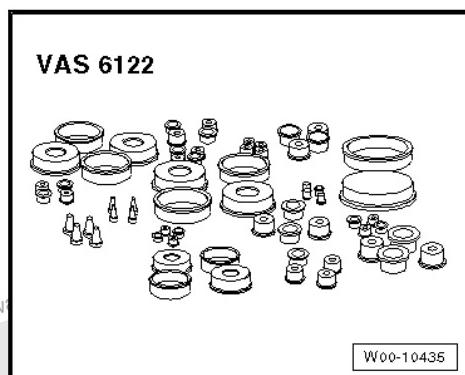
- ◆ Release Tool - Brake Servo -T10159A-
- ◆ Sealing Tool -T10249-
- ◆ Torque Wrench 1331 5-50Nm -VAG1331-
- ◆ Brake Charger/Bleeder Unit -VAS5234-
- ◆ Plugs -1H0 698 311 A-



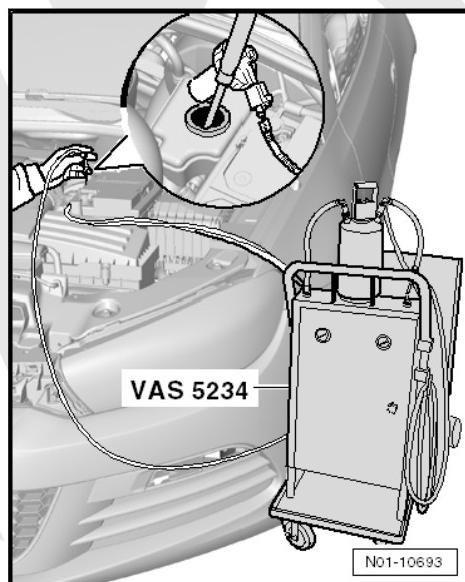
- ◆ Hose Clip Pliers -VAS6340-



- ◆ Engine Bung Set -VAS6122-



Removing



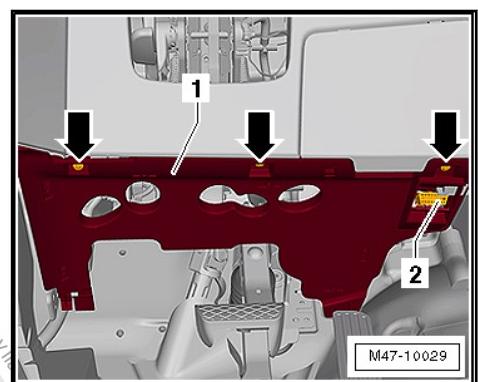
- Place sufficient lint-free cloths in the area of the engine and transmission.
- Extract as much brake fluid as possible from the brake fluid reservoir using Brake Charger/Bleeder Unit -VAS5234-.



WARNING

- ◆ Brake fluid must never come into contact with fluids containing mineral oils (oil, gas, cleaning solutions). Mineral oil damages the plugs and sleeves in the brake system.
- ◆ Brake fluid is poisonous. NEVER siphon brake fluid with your mouth! Also due to its corrosive effect, brake fluid must not come into contact with paintwork.
- ◆ Extract brake fluid cannot be used again.
- ◆ Observe the disposal regulations.

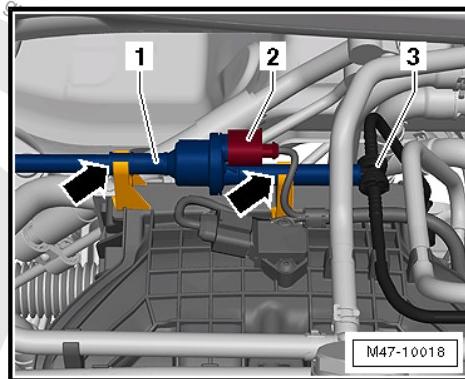
- Remove the wiper arms. Refer to ⇒ Electrical Equipment; Rep. Gr. 92; Windshield Wiper System; Windshield Wiper System, Removing and Installing; Wiper Arms, Removing
- Remove the plenum chamber cover. Refer to ⇒ Body Exterior; Rep. Gr. 50; Overview - Plenum Chamber Cover.
- Remove the plenum chamber bulkhead. Refer to ⇒ Body Exterior; Rep. Gr. 50; Overview - Plenum Chamber Bulkhead.
- If equipped, remove the instrument panel trim panel -1- in the driver footwell. Refer to ⇒ Body Interior; Rep. Gr. 70; Component Location Overview - Passenger Compartment Trim.



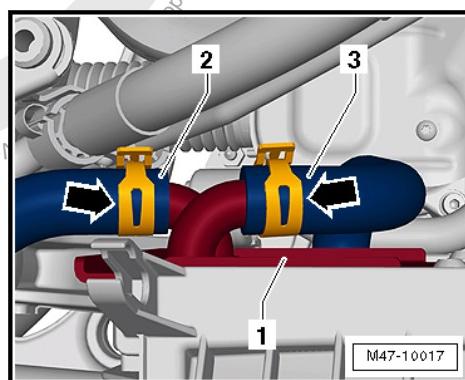
- To do this, remove the bolts -arrows-.
- Remove diagnostic plug -2-.
- Remove the footwell vent on the driver side. Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 80; Air Duct; Overview - Passenger Compartment Air Ducts and Air Distribution.
- If equipped, remove the knee airbag. Refer to ⇒ Body Interior; Rep. Gr. 69; Knee Airbags; Knee Airbag with Igniter, Removing and Installing.
- Disconnect brake pedal from brake booster. Refer to ⇒ "P2.6 edal, Removing from Brake Booster", page 119.



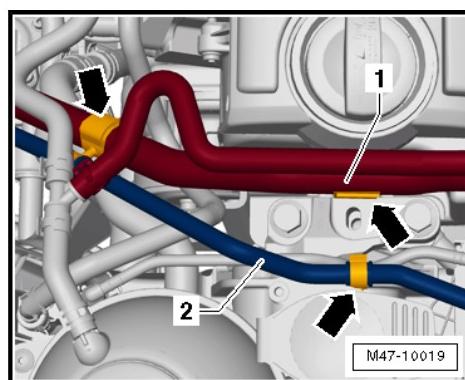
Vehicles with 1.4L 90 kW gasoline engine with turbocharger



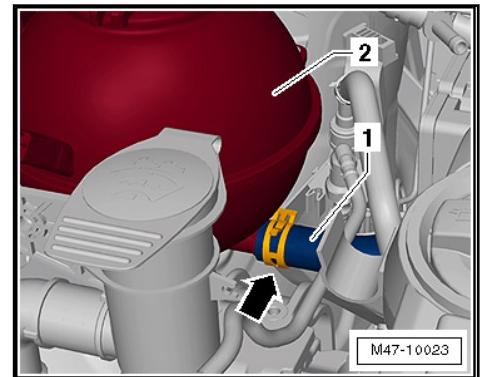
- Drain the coolant. Refer to ⇒ Rep. Gr. 19; Coolant System/Coolant, Coolant, Draining and Filling.
- Disengage connector -2- at wire -1- and remove.
- Unclip wire -1- at intake manifold from brackets -arrows-.
- Remove wire -1- at coupling point -3-.
- Remove coolant hose -2- at charge air cooler -1-.



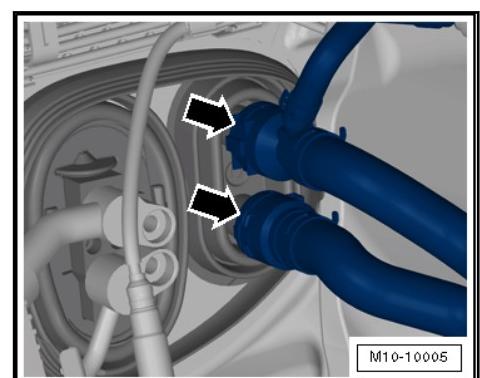
- To do this, open clamp -arrow-.
- Unclip wire -2- and coolant hoses -1- from brackets -arrows-.



- Set wire -2- and coolant hose -1- aside.
- Remove coolant hose -1- at coolant reservoir -2-.

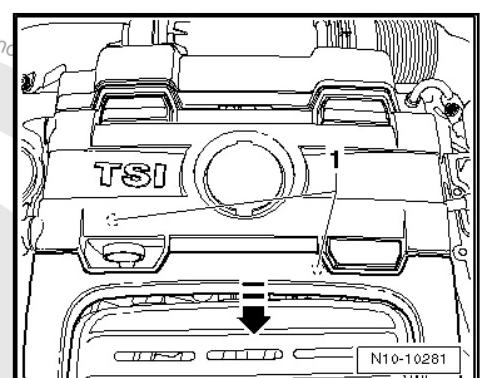


- To do this, open clamp -arrow-.
- Remove the coolant hoses -arrows- from the heater core.



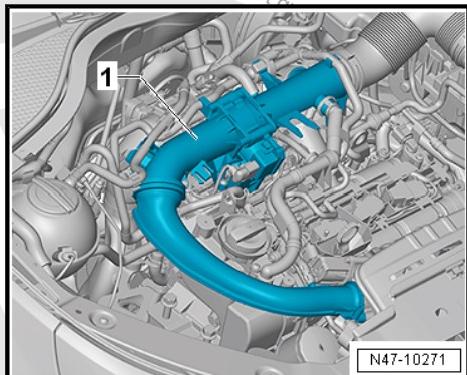
- Move the coolant hoses to the side.
- Seal the openings using the Engine Bung Set -VAS6122-.

Vehicles with 1.4L gasoline engine, turbocharger and compressor:

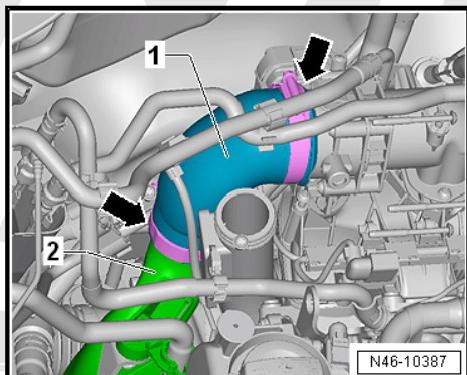


- Lift the engine cover at the points -1- and pull it forward in the -direction of the arrow-. Refer to ⇒ Rep. Gr. 10; Engine Cover; Engine Cover, Removing and Installing.
- Remove the pressure pipe -1- with the Control Valve Control Unit -J808- and Throttle Valve Control Module -J338-. Refer to ⇒ Rep. Gr. 24; Intake Manifold; Control Valve Control Unit -J808- and Throttle Valve Control Module -J338-, Removing and Installing.

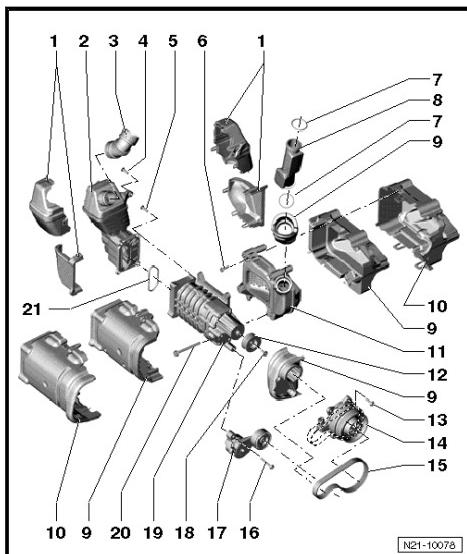




- Loosen the clamps -arrows-.



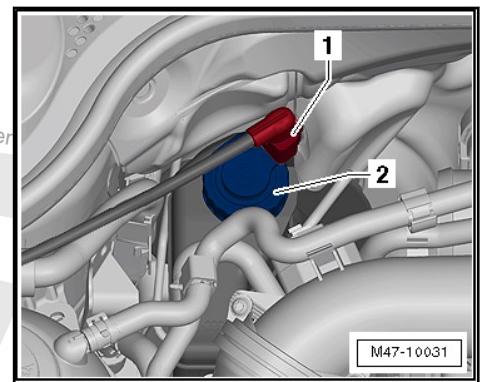
- Remove the charge air hose -1- between the Throttle Valve Control Module -J338- and the charge air pipe -2-. Refer to ⇒ Rep. Gr. 21; Overview - Charge Air System.
- Remove the charge air pipe -2-. Refer to ⇒ Rep. Gr. 21; Overview - Charge Air System.
- Remove the housing -10- and the noise insulation -9-. Refer to ⇒ Rep. Gr. 21; Overview - Compressor.



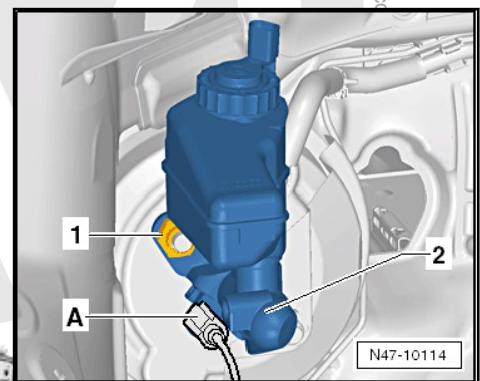
- Seal the openings using the Engine Bung Set -VAS6122-.



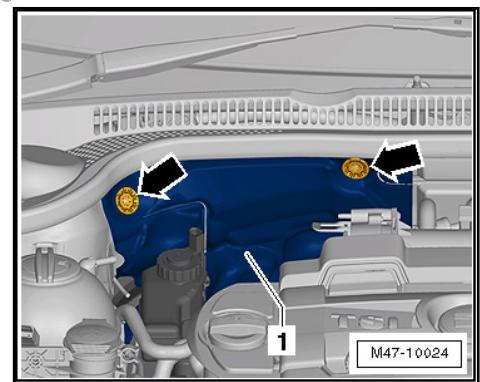
Continuation for all vehicles



- Disconnect the connector -1- from the Brake Fluid Level Warning Switch -F34- -2-.
- Disconnect and remove the connector -A- from the Brake Lamp Switch -F-.

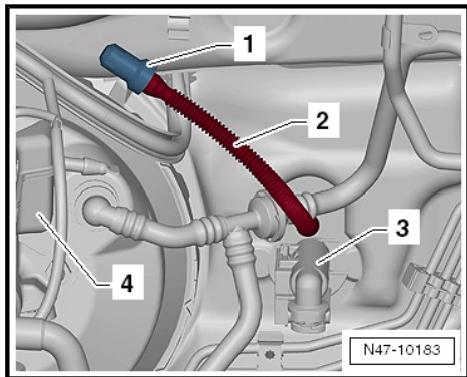


- Remove securing plate -arrows- and fold the noise insulation -1- forward.

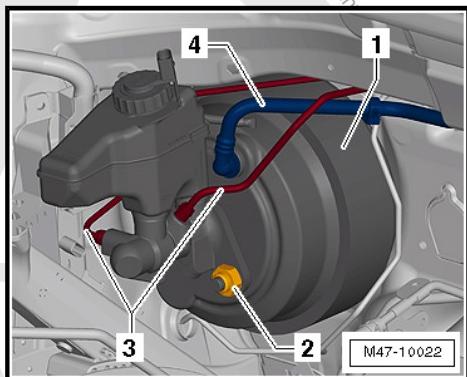


Vehicles with a manual transmission

- Remove the supply hose -2- for the clutch master cylinder -3- from the brake fluid reservoir -4-.



- Seal the supply hose -2- for the clutch master cylinder -3- using Sealing Tool -T10249- -1- or Engine Bung Set -VAS6122-.
- Seal off the supply hose -2-.
- Remove brake lines -3- on the master brake cylinder -1-.



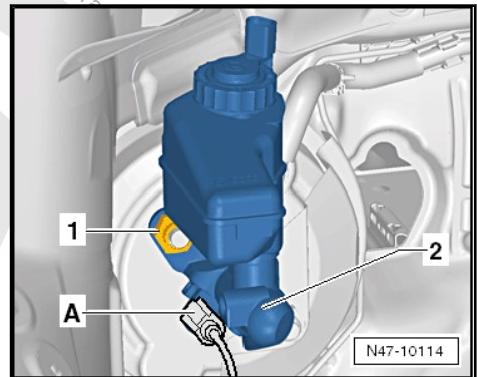
Caution

Brake lines must not be bent.

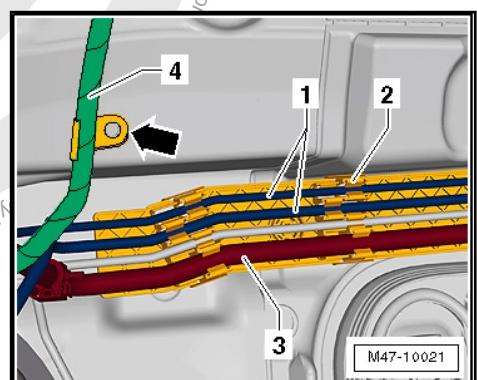
Do not confuse the brake lines when connecting them.

Mark the lines in their installed position before removing them.

- Seal off the brake lines with the plugs from the Repair Kit -1H0 698 311 A-.
- Remove the nut -2-.
- Pull the vacuum line -4- out of the brake booster -1-.
- Remove the heat shield, if equipped.
- Remove the nut -1-.

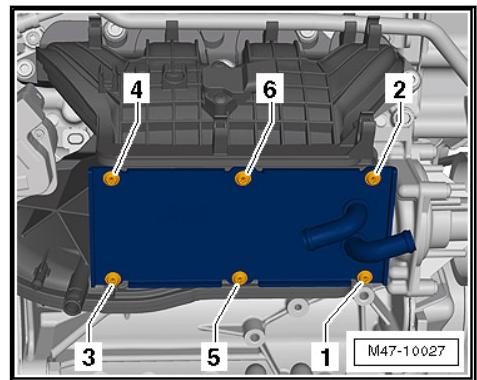


- Carefully take brake master cylinder -2- out of the brake booster.
- Unclip brake lines -1- from the bracket -2-.

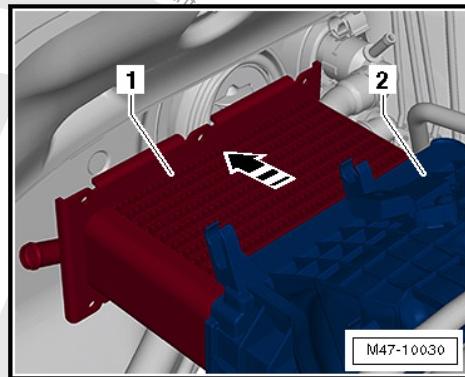


- Unclip vacuum line -3- from the bracket -2-.
- Unclip the wiring harness -4- on the bulkhead -arrow-.

Continuation for vehicles with 1.4 L 90 kW gasoline engine and turbocharger

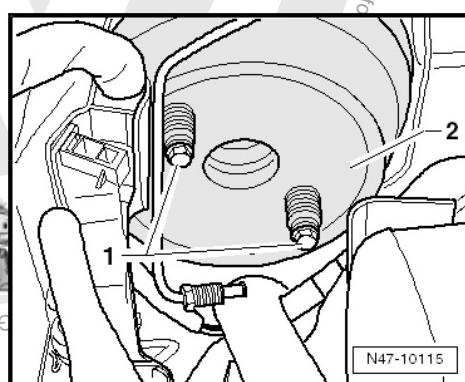


- Remove charge air cooler in sequence shown -1- through -6-.
- Pull charge air cooler -1- in -direction of arrow- from the intake manifold -2-.



- Remove charge air cooler -1- to the bulkhead.

Continuation for all vehicles:

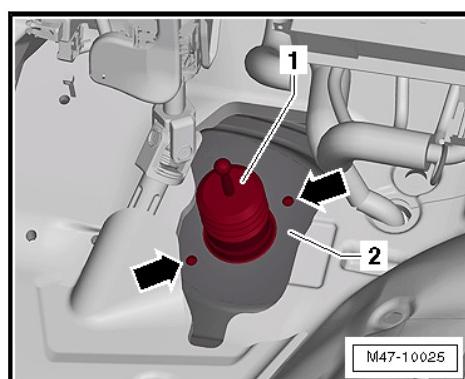


- Remove the screws -1- from the brake booster -2-.
- Carefully remove the brake booster -2- from the vehicle.
- Carefully remove the brake booster from the vehicle.

Installing

Installation is the reverse of removal, with special attention to the following:

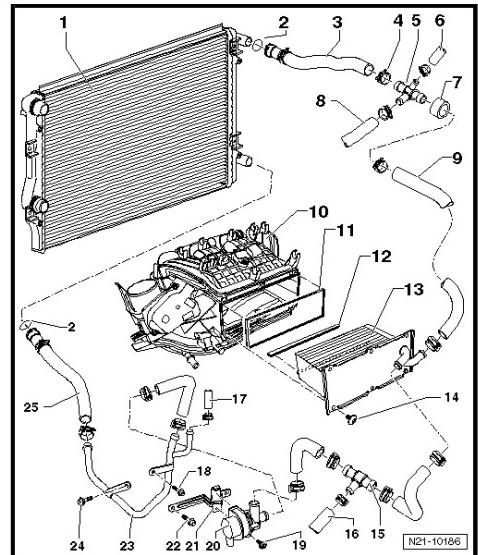
- Carefully install the brake booster and tighten the bolts hand-tight.
- When installing together the brake master cylinder and brake booster, make sure that the push rod is correctly located in the brake master cylinder.
- Make sure that the brake booster -1- sits correctly in the support openings -arrows- on the bulkhead -2-.



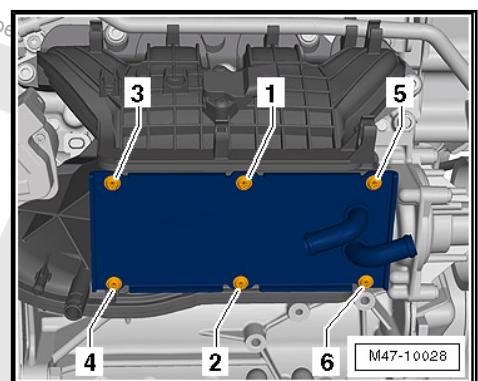


- Make sure the seal fits correctly when attaching the master brake cylinder to the brake booster -item 6- [⇒ Item 6 \(page 146\)](#).

Continuation for vehicles with 1.4 L 90 kW gasoline engine and turbocharger:



- When installing, check that the charge air cooler -13- seal -11- fits correctly.
- Secure charge air cooler in sequence shown -1- through -6-.



- Secure charge air cooler in sequence shown -1- through -6-.
- Check the coolant level. Refer to ⇒ Rep. Gr. 19; Coolant System/Coolant, Coolant, Draining and Filling.

Continuation for all vehicles:

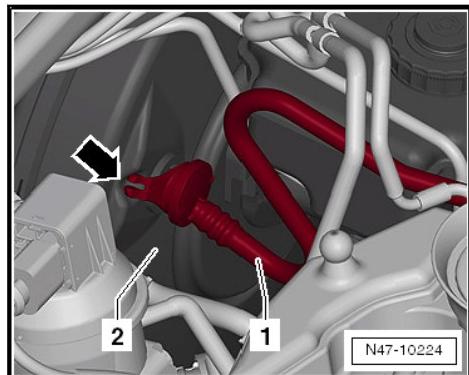
- Clip the brake pedal to the brake booster. Refer to [⇒ page 120](#).
- Bleed the brake system. Refer to [⇒ S1.3 ystem, Bleeding](#), [page 132](#).

Vehicles with a manual transmission:

- Bleed the clutch. Refer to ⇒ Rep. Gr. 30; Clutch Mechanism; Clutch Mechanism, Bleeding.



Continuation for all vehicles:

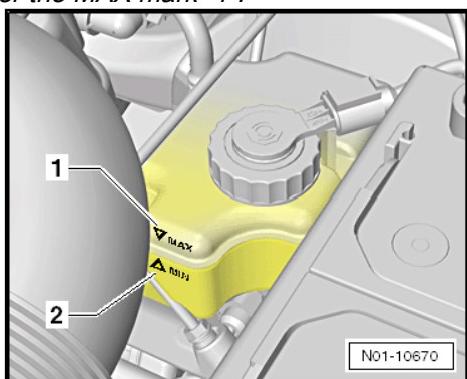


- Insert the tab on the vacuum line -1- into the opening -arrow- in the brake booster -2-.



Note

To prevent the brake fluid from overflowing from the reservoir, the level must not be over the MAX mark -1-.



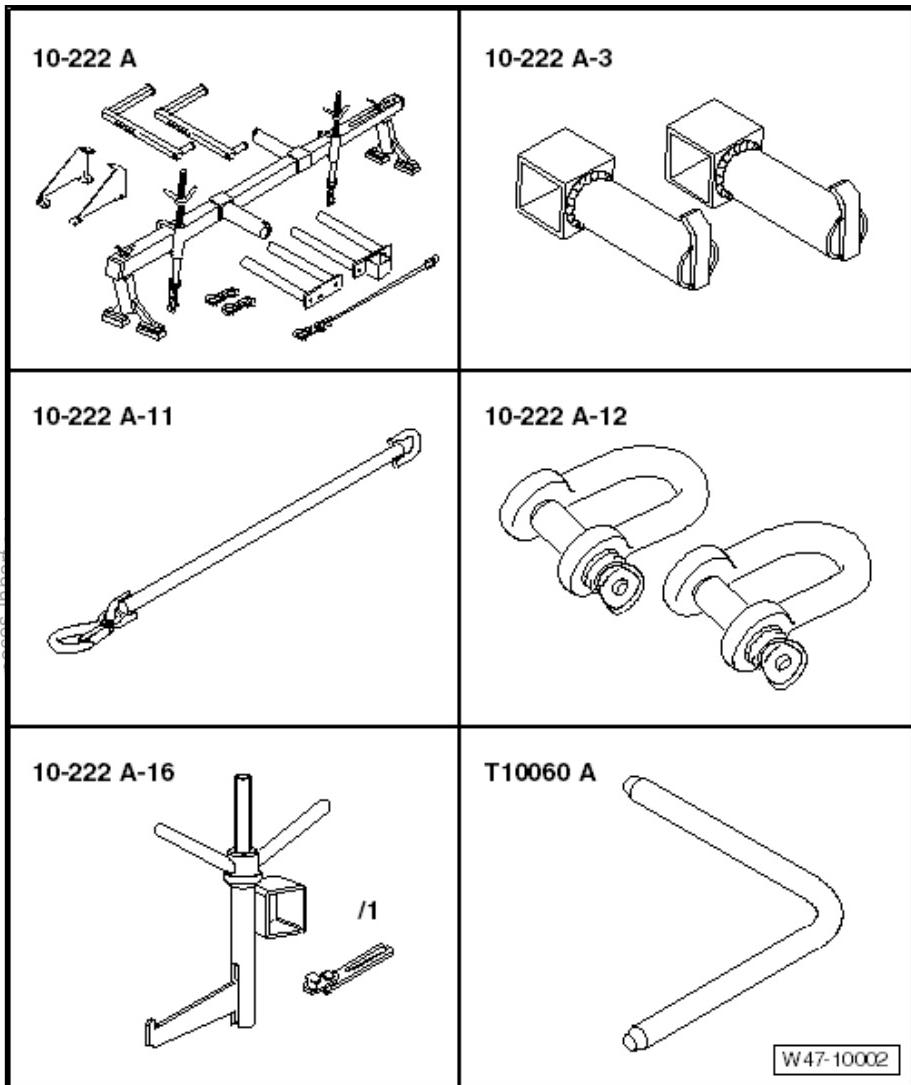
Tightening specification

Component	Tightening specification
Brake booster to pedal assembly/bulkhead ◆ Use new bolts	25 Nm
Brake master cylinder to brake booster ◆ Replace after removing	50 Nm
Brake lines to brake master cylinder	14 Nm
Charge air cooler	7 Nm
Coolant system	Refer to ⇒ Rep. Gr. 19; Cooling System/Coolant; Coolant Hoses Connection Diagram.
Intake Manifold	Refer to ⇒ Rep. Gr. 24; Overview - Intake Manifold.
Wiper arms	Refer to ⇒ Electrical Equipment; Rep. Gr. 92; Windshield Wiper System; Windshield Wiper System, Removing and Installing; Wiper Arms, Removing
Plenum Chamber Cover	Refer to ⇒ Body Exterior; Rep. Gr. 50; Overview - Plenum Chamber Cover.
Plenum Chamber Bulkhead	Refer to ⇒ Body Exterior; Rep. Gr. 50; Overview - Plenum Chamber Bulkhead.



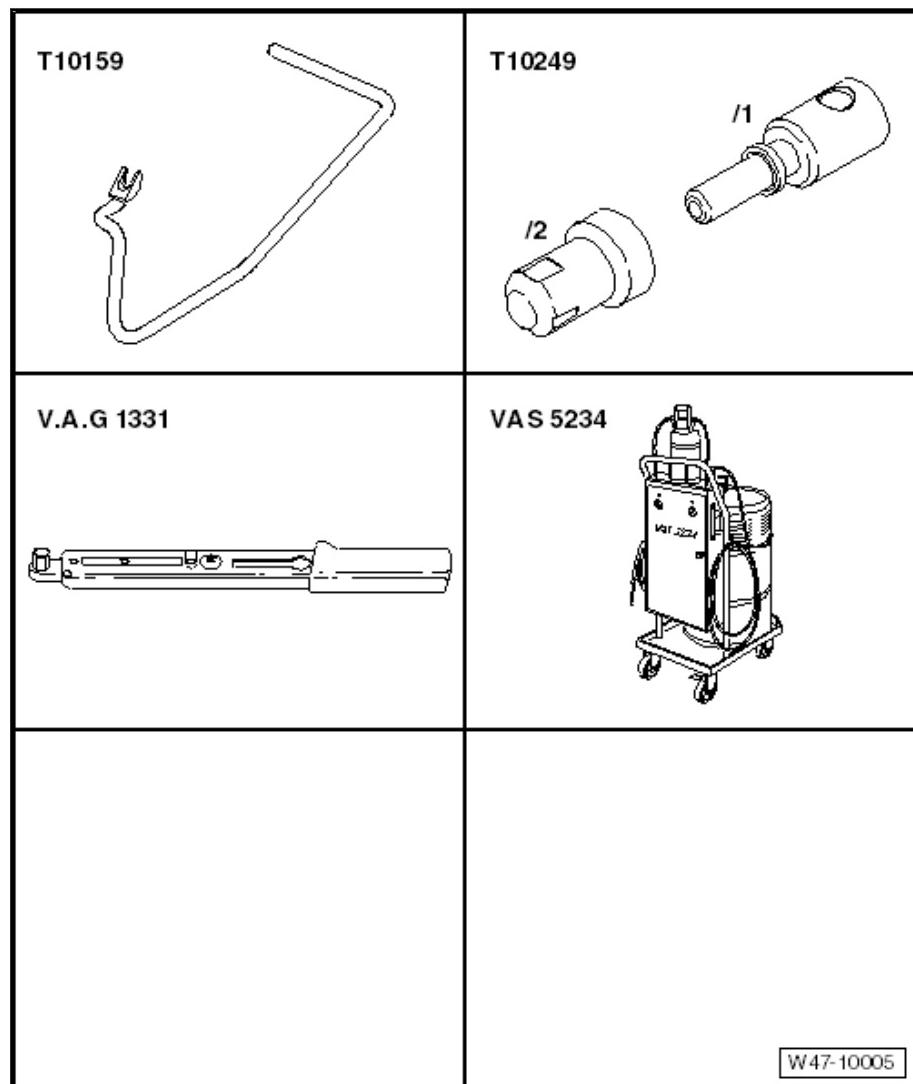
4.6.3 Brake Booster, Removing and Installing, RHD with 2.0L Engine and Turbocharger

Special tools and workshop equipment required



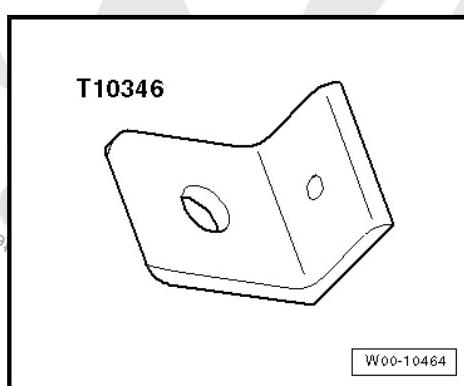
W47-10002

- ◆ Engine Support Bridge -10-222A-
- ◆ Engine Support Bridge - Engine Support 3 -10-222A/3-
- ◆ Engine Support Bridge - Spindle - 10-222A/11-
- ◆ Engine/Gearbox Support Shackle (2 pc.) -10-222A/12-
- ◆ Engine Support - Automatic Transmission Adapter -
10-222A/16-
- ◆ Locking Pin -T10060A-



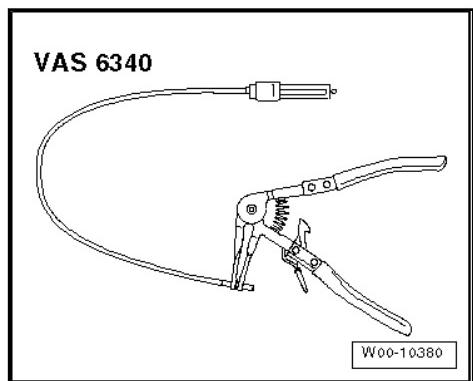
- ◆ Release Tool - Brake Servo -T10159A-
- ◆ Sealing Tool -T10249-
- ◆ Torque Wrench 1331 5-50Nm -VAG1331-
- ◆ Brake Charger/Bleeder Unit -VAS5234-
- ◆ Plugs -1H0 698 311 A-
- ◆ Engine Support Bridge - Gearbox Bracket -T10346-

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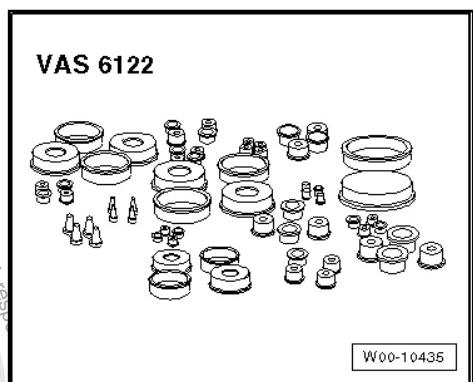




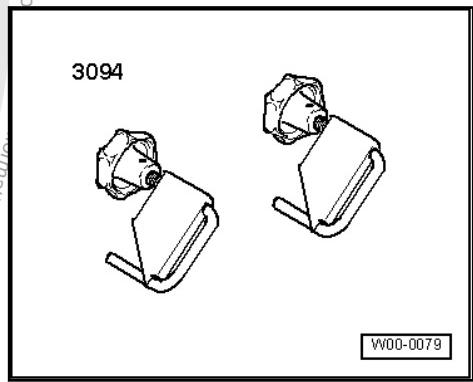
- ◆ Hose Clip Pliers -VAS6340-



- ◆ Engine Bung Set -VAS6122-



- ◆ Hose Clamps - Up To 25 mm -3094-



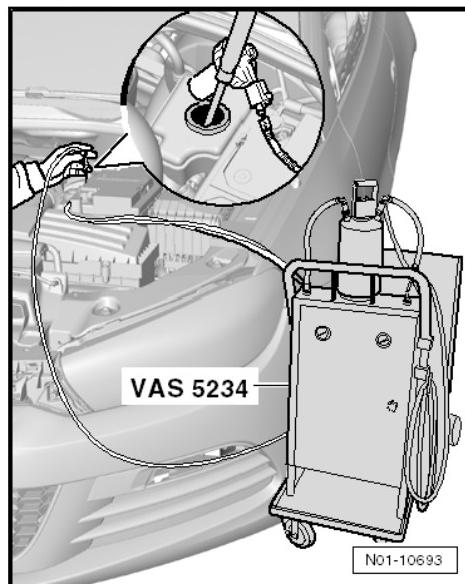
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Removing



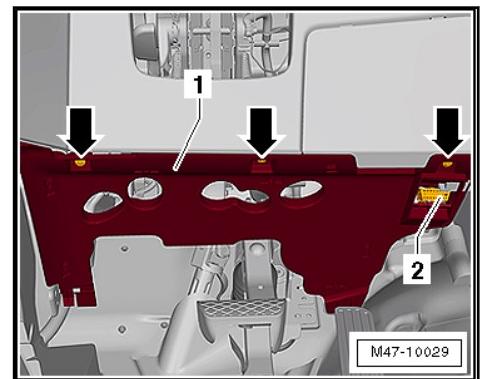
- Place sufficient lint-free cloths in the area of the engine and transmission.
- Extract as much brake fluid as possible from the brake fluid reservoir using Brake Charger/Bleeder Unit -VAS5234-.



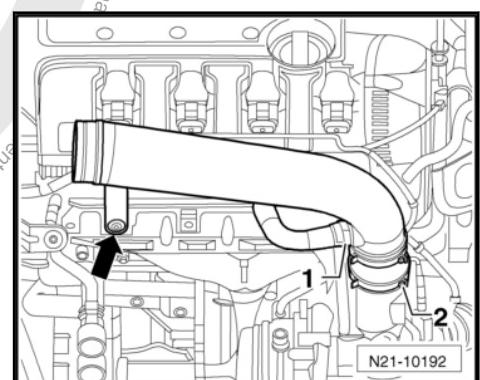
WARNING

- ◆ **Brake fluid must never come into contact with fluids containing mineral oils (oil, gas, cleaning solutions). Mineral oil damages the plugs and sleeves in the brake system.**
- ◆ **Brake fluid is poisonous. NEVER siphon brake fluid with your mouth! Also due to its corrosive effect, brake fluid must not come into contact with paintwork.**
- ◆ **Extract brake fluid cannot be used again.**
- ◆ **Observe the disposal regulations.**

- Remove the wiper arms. Refer to ⇒ Electrical Equipment; Rep. Gr. 92; Windshield Wiper System, Windshield Wiper System, Removing and Installing; Wiper Arms, Removing
- Remove the plenum chamber cover. Refer to ⇒ Body Exterior; Rep. Gr. 50; Overview - Plenum Chamber Cover.
- Remove the plenum chamber bulkhead. Refer to ⇒ Body Exterior; Rep. Gr. 50; Overview - Plenum Chamber Bulkhead.
- If equipped, remove the instrument panel trim panel -1- in the driver footwell. Refer to ⇒ Body Interior; Rep. Gr. 70; Component Location Overview - Passenger Compartment Trim.



- To do this, remove the bolts -arrows-.
- Remove diagnostic plug -2-.
- Remove the footwell vent on the driver side. Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 80; Air Duct; Overview - Passenger Compartment Air Ducts and Air Distribution.
- If equipped, remove the knee airbag. Refer to ⇒ Body Interior; Rep. Gr. 69; Knee Airbags; Knee Airbag with Igniter, Removing and Installing.
- Disconnect brake pedal from brake booster. Refer to ⇒ P2.6 edal, Removing from Brake Booster", page 119 .
- Remove the engine cover. Refer to ⇒ Rep. Gr. 10; Engine Cover; Engine Cover, Removing and Installing.
- Remove the battery. Refer to ⇒ Electrical Equipment; Rep. Gr. 27; Battery, Removing and Installing.
- Remove the air filter. Refer to ⇒ Rep. Gr. 24; Air Filter; Overview - Air Filter Housing.
- If necessary, remove the intake hose. Refer to ⇒ Rep. Gr. 24; Air Filter; Overview - Air Filter Housing.
- Remove the battery tray. Refer to ⇒ Electrical Equipment; Rep. Gr. 27; Battery; Battery Tray, Removing and Installing.
- Press the release buttons, disconnect the air guide hose -1- and move it to the side.

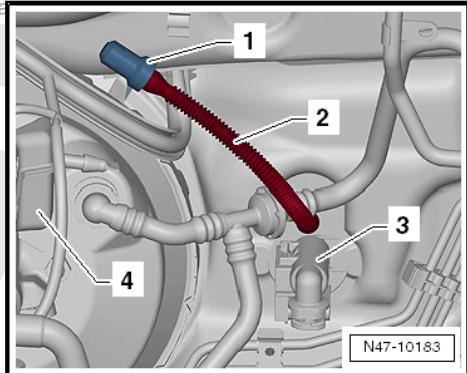


- Remove the air guide pipe bolt -arrow-.
- Remove the air guide pipe; to do this, loosen the hose clamp -2-.
- Remove the intake hose between the intake hose and the turbocharger.



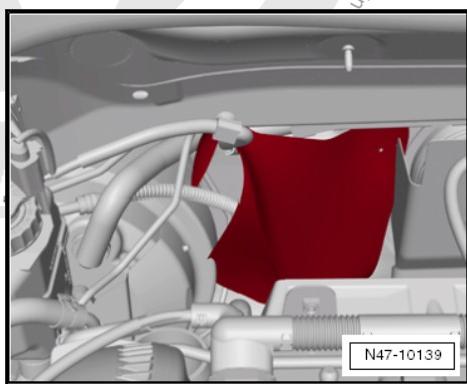
- Seal the turbocharger using the Engine Bung Set - VAS6122-.

Vehicles with a manual transmission:

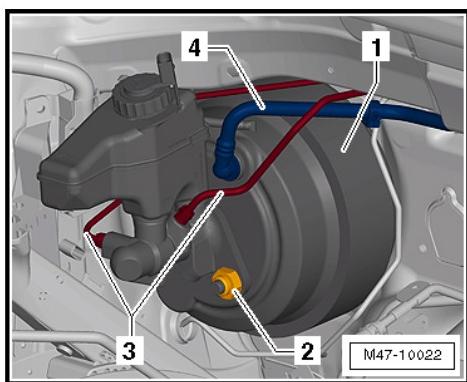


- Remove the supply hose -2- for the clutch master cylinder -3- from the brake fluid reservoir -4-.
- Seal the supply hose -2- for the clutch master cylinder -3- using Sealing Tool -T10249- -1- or Engine Bung Set -VAS6122-.
- Seal off the supply hose -2-

Continuation for all vehicles:



- Remove the heat shield and move it to the side.
- Remove brake lines -3- on the master brake cylinder -1-.





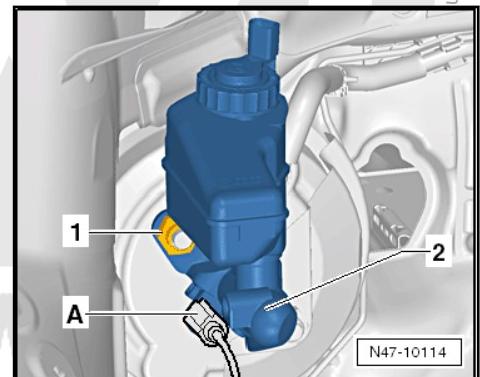
Caution

Brake lines must not be bent.

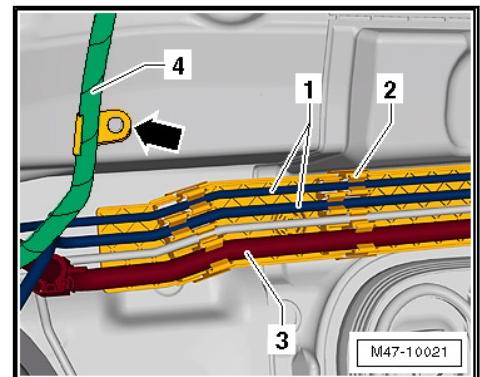
Do not confuse the brake lines when connecting them.

Mark the lines in their installed position before removing them.

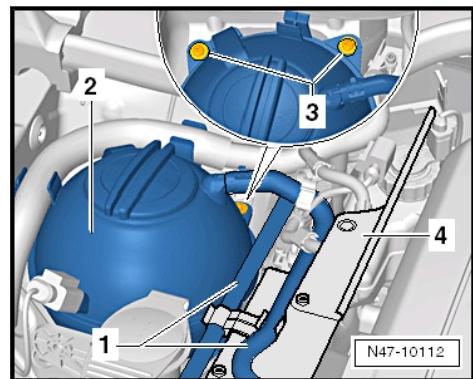
- Seal off the brake lines with the plugs from the Repair Kit -1H0 698 311 A-.
- Remove the nut -2-.
- Pull the vacuum line -4- out of the brake booster -1-.
- Remove the heat shield, if equipped.
- Remove the connector -A- from Brake Lamp Switch -F-.



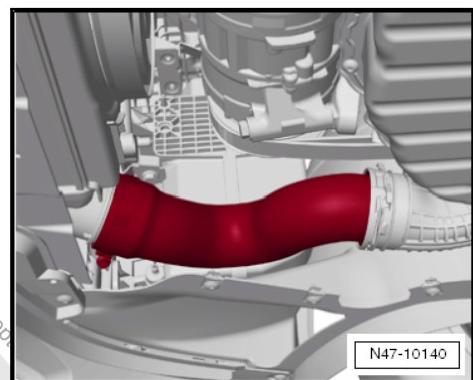
- Remove the nut -1- from the brake master cylinder -2-.
- Carefully take brake master cylinder -2- out of brake booster.
- Unclip brake lines -1- from the bracket -2-.



- Unclip vacuum line -3- from the bracket -2-.
- If equipped, unclip the wiring harness -4- on the bulkhead -arrow-.
- Remove the lines -1-.



- Remove the screws -3- and move the coolant reservoir -2- to the side.
- Remove the shift cable from the gearshift lever and remove the cable bracket from the transmission housing. Refer to ⇒ Rep. Gr. 34; Shift Mechanism, Servicing; Shift Mechanism, Removing and Installing.
- Remove the noise insulation. Refer to ⇒ Body Exterior; Rep. Gr. 50; Noise Insulation; Overview - Noise Insulation.
- Remove the turbocharger charge air hose from the charge air pipe.



- Bring the lock carrier into the service position. Refer to ⇒ Body Exterior; Rep. Gr. 50; Body Front; Service Position.

Vehicles with air conditioning:

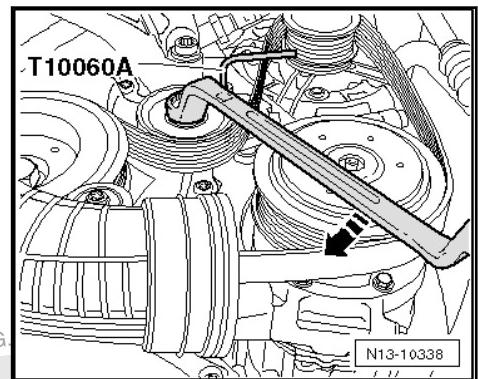


Caution

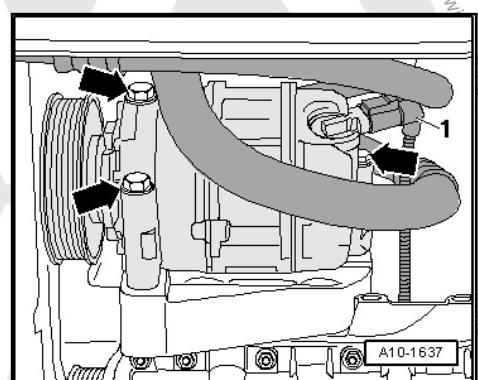
Reversed direction of travel with a used belt can lead to malfunctions.

◆ *Mark the direction of travel with chalk or a marker before removing the ribbed belt.*

- To release the tension on the ribbed belt, turn the tensioner in -direction of arrow- from underneath.



- Secure the tensioning system using the Locking Pin - T10060A-.
- Remove the ribbed belt.
- Disconnect the connector -1- for the A/C Compressor Regulator Valve -N280-.



WARNING

Refrigerant can cause serious personal injury. It is prohibited to handle refrigerant circuit components unless authorised by Volkswagen AG.

- ◆ **Do not open the A/C system refrigerant circuit.**

- Remove the screws -arrows- on the A/C compressor.



Caution

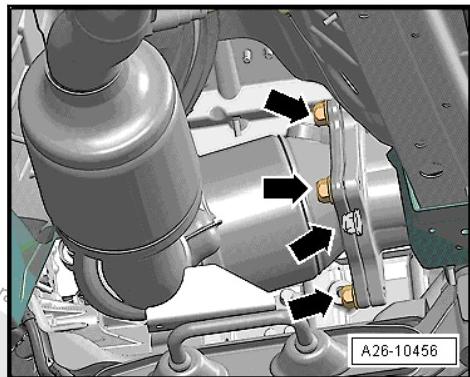
Danger of causing damage to the refrigerant lines and hoses.

- ◆ **Do not bend, twist or stretch the refrigerant lines and hoses.**

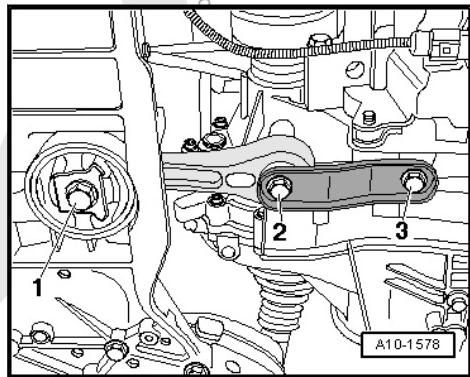
- Tie the A/C compressor to the longitudinal member with the refrigerant hoses still connected.



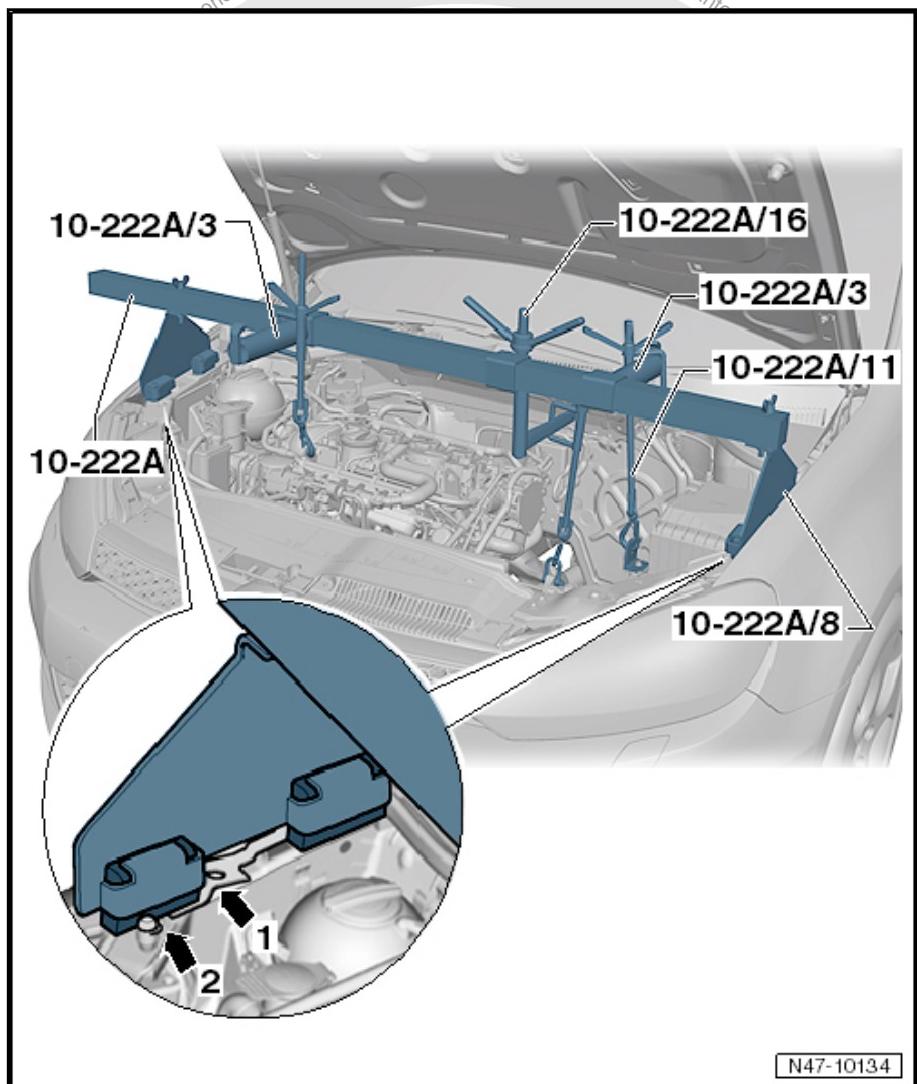
Continuation for all vehicles:



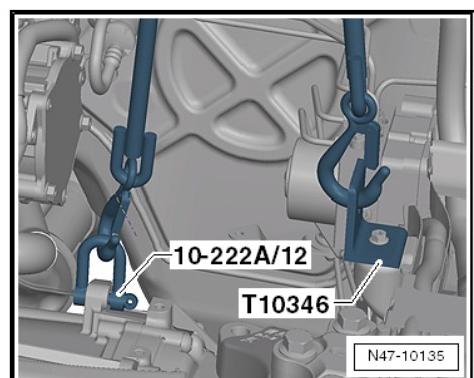
- Remove the nuts -arrows- on the front exhaust pipe / turbo-charger connection.
- Move the front exhaust pipe to the side.
- Remove the bolts -1- through -3- and the pendulum support.



- Remove the cable bracket from the transmission. Refer to
⇒ Rep. Gr. 34.
- Position the Engine Support Bridge -10-222A- and support
the engine/transmission.



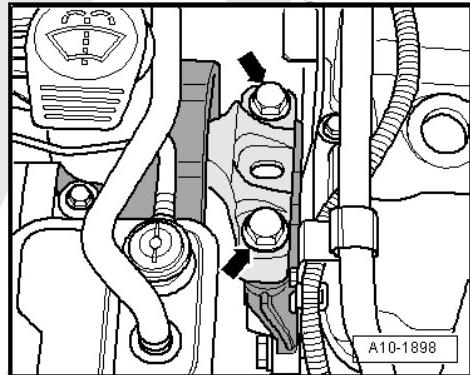
- Position the Engine Support Bridge - Engine Support Feet -10-222A/8- on the longitudinal members directly in front of the raised area -arrow 1- and next to the bolt -arrow 2-.
- Attach the Engine Support Bridge - Gearbox Bracket - T10346- to the three rearmost locating holes for the battery tray.



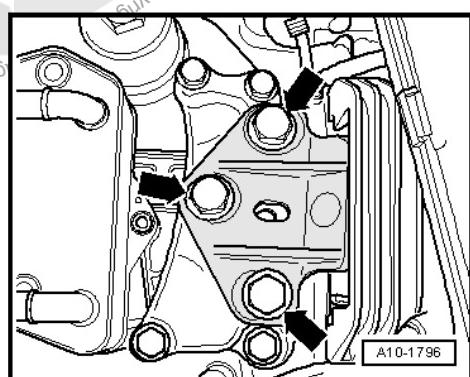
- Engage and tension the Engine Support Bridge - Spindle -10-222A/11- in the Engine Support Bridge - Gearbox Bracket - T10346-.



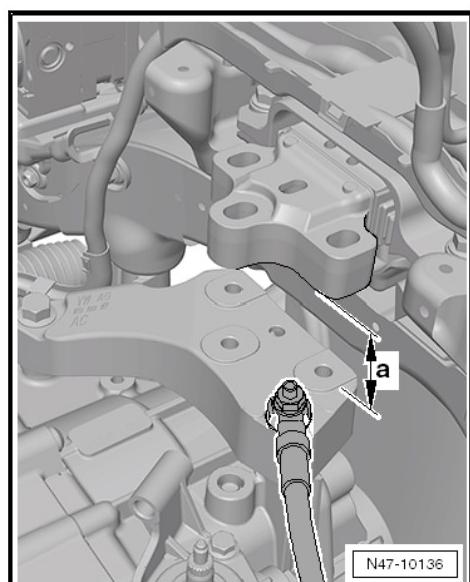
- Secure the Engine/Gearbox Support Shackle (2 pc.) -10-222A/12- on the transmission housing.
- Engage and tension the spindle of the Engine Support Bridge -10-222A- in the Engine/Gearbox Support Shackle (2 pc.) -10-222A/12-.
- Remove the subframe mount bolts -arrows- on the engine.



- Remove the subframe mount bolts -arrows- on the transmission.



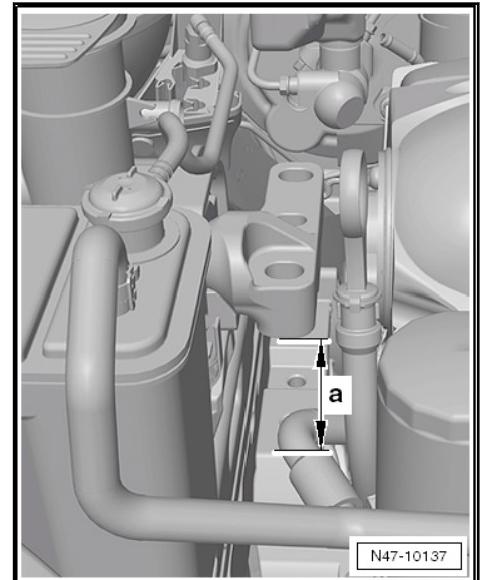
- Lower the assemblies alternating from side to side using the spindles and pull it as far forward as possible.



The distance -a- on the transmission side between the transmission support and the transmission mount must not be more than 7 cm.



The distance -b- on the engine side between the engine support and the engine mount must not be more than 11 cm.

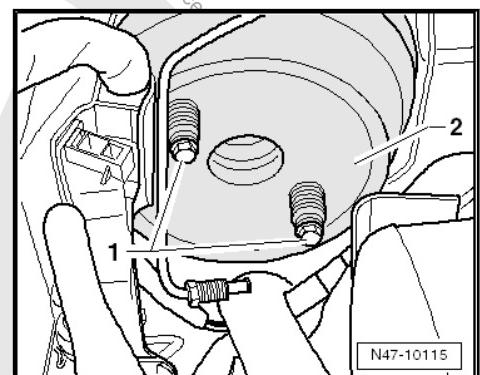


N47-10137



Note

- ◆ Make sure there is driveshaft clearance to the subframe.
- ◆ To prevent damage the driveshafts must not lay on the subframe.
- Remove the screws -1- from the brake booster.



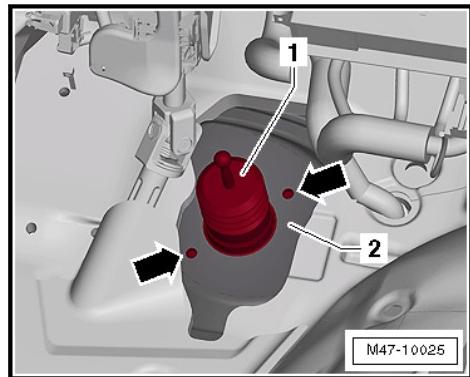
N47-10115

- Carefully remove the brake booster -2- from the vehicle.

Installing

Installation is the reverse of removal, with special attention to the following:

- Carefully install the brake booster and tighten the bolts hand-tight.
- When installing together the brake master cylinder and brake booster, make sure that the push rod is correctly located in the brake master cylinder.
- Make sure that the brake booster -1- sits correctly in the support openings -arrows- on the bulkhead -2-.

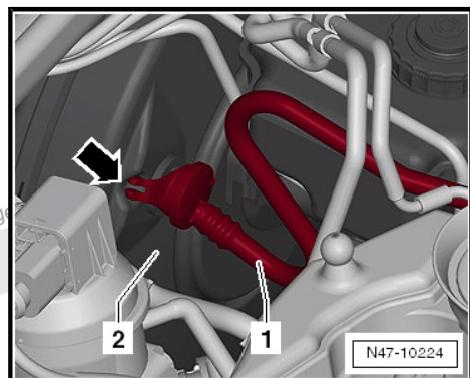


- Make sure the seal fits correctly when attaching the master brake cylinder to the brake booster -item 6- ⇒ [Item 6 \(page 146\)](#).
- Clip the brake pedal to the brake booster. Refer to ⇒ [P2.7 edal, Attaching to Brake Booster](#), page 120.
- Bleed the brake system. Refer to ⇒ [S1.3 ystem, Bleeding](#), page 132.

Vehicles with a manual transmission:

- Bleed the clutch. Refer to ⇒ Rep. Gr. 30; Clutch Mechanism; Clutch Mechanism, Bleeding.

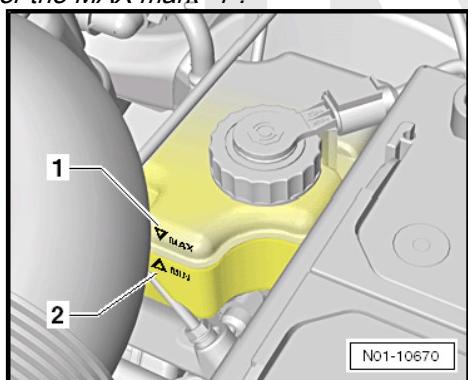
Continuation for all vehicles:



- Insert the tab on the vacuum line -1- into the opening -arrow- in the brake booster -2-.



To prevent the brake fluid from overflowing from the reservoir, the level must not be over the MAX mark -1-.





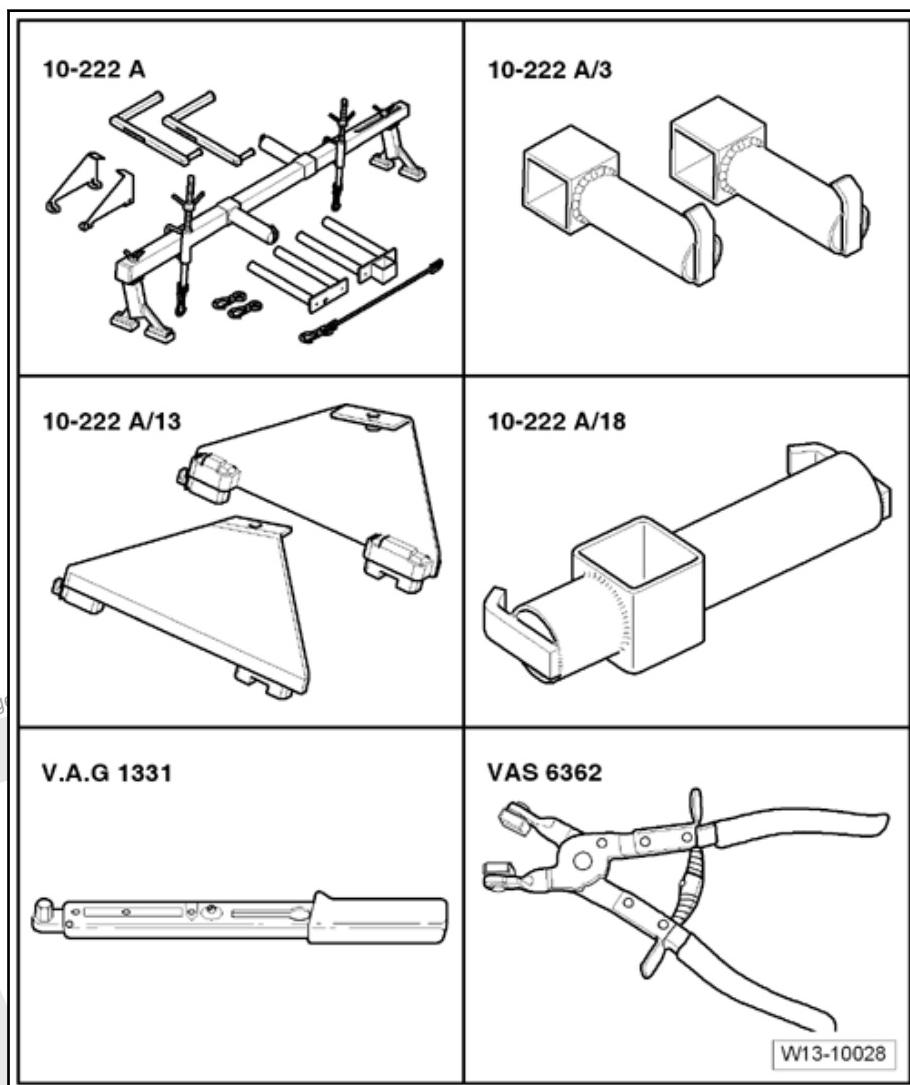
Tightening specification

Component	Tightening specification
Brake booster to pedal assembly/bulk-head ◆ Use new bolts.	25 Nm
Brake master cylinder to brake booster ◆ Replace after removing	50 Nm
Brake lines to brake master cylinder	14 Nm
Charge air cooler	Refer to ⇒ Rep. Gr. 21; Overview - Charge Air System.
Engine Cover	Refer to ⇒ Rep. Gr. 10; Engine Cover; Engine Cover, Removing and Installing.
Air Filter	Refer to ⇒ Rep. Gr. 24; Air Filter; Overview - Air Filter Housing.
Battery tray	Refer to ⇒ Electrical Equipment; Rep. Gr. 27; Battery; Battery Tray, Removing and Installing.
Battery	Refer to ⇒ Electrical Equipment; Rep. Gr. 27; Battery, Removing and Installing.
Wiper arms	Refer to ⇒ Electrical Equipment; Rep. Gr. 92; Windshield Wiper System; Windshield Wiper System, Removing and Installing; Wiper Arms, Removing
Plenum Chamber Cover	Refer to ⇒ Body Exterior; Rep. Gr. 50; Overview - Plenum Chamber Cover.
Plenum Chamber Bulkhead	Refer to ⇒ Body Exterior; Rep. Gr. 50; Overview - Plenum Chamber Bulkhead.

4.6.4 Brake Booster, Removing and Installing, RHD with Diesel Engine

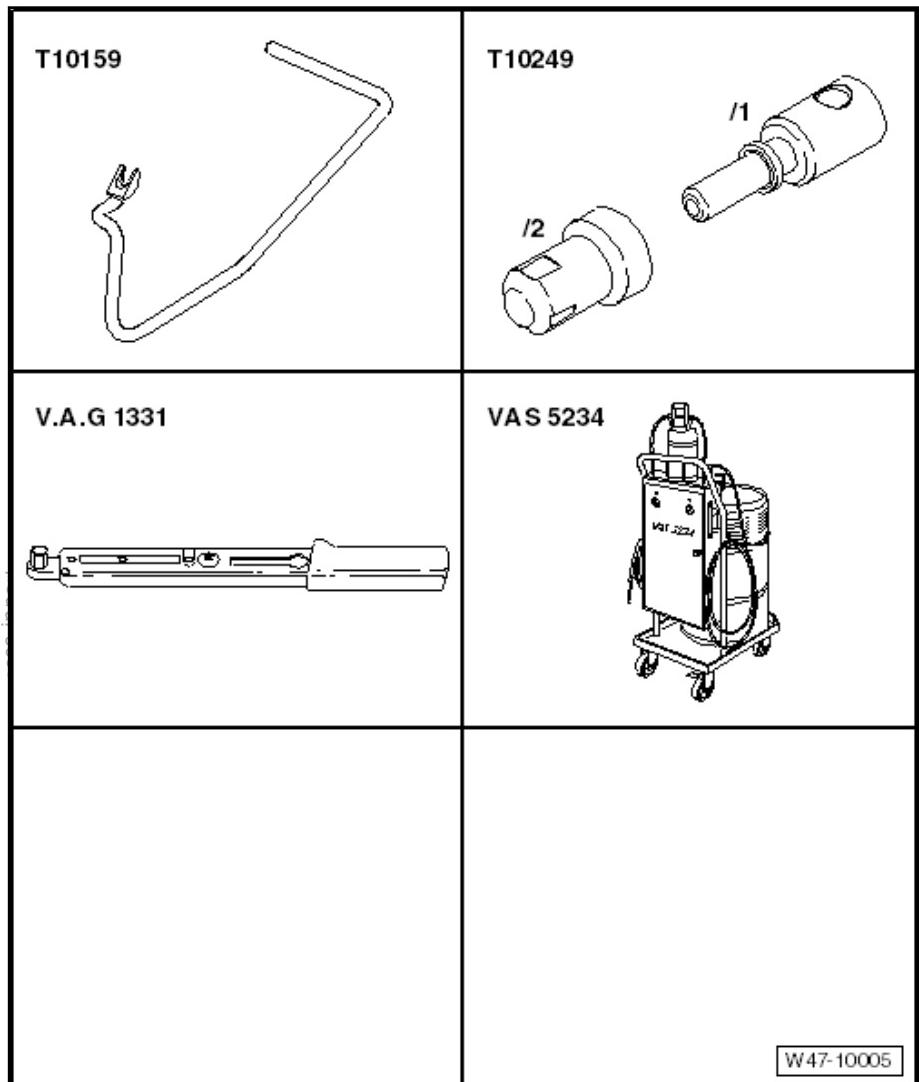


Special tools and workshop equipment required

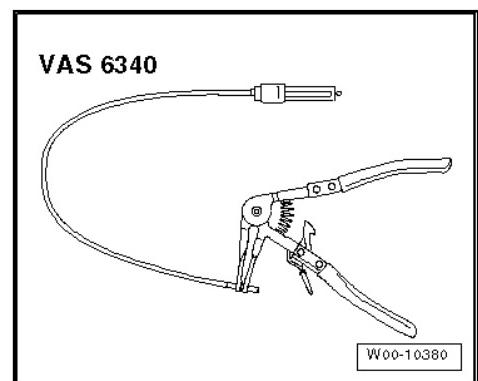


- ◆ Engine Support Bridge -10-222A-
- ◆ Engine Support Bridge - Engine Support 3 -10-222A/3-
- ◆ Engine Support Bridge - Gearbox Adapter -10-222A/13-
- ◆ Engine Support Bridge - Engine Support 18 -10-222A/18-
- ◆ Torque Wrench 1331 5-50Nm -VAG1331-
- ◆ Hose Clip Pliers -VAS6362-

Correctness of information in this document.

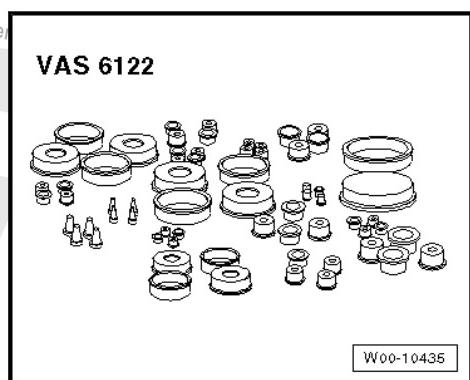


- ◆ Release Tool - Brake Servo -T10159A-
- ◆ Sealing Tool -T10249-
- ◆ Torque Wrench 1331 5-50Nm -VAG1331-
- ◆ Brake Charger/Bleeder Unit -VAS5234-
- ◆ Plugs -1H0 698 311 A-
- ◆ Hose Clip Pliers -VAS6340-



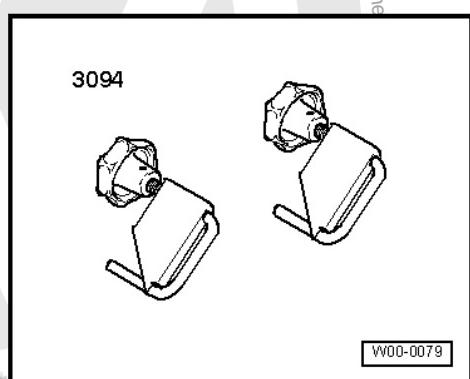


◆ Engine Bung Set -VAS6122-



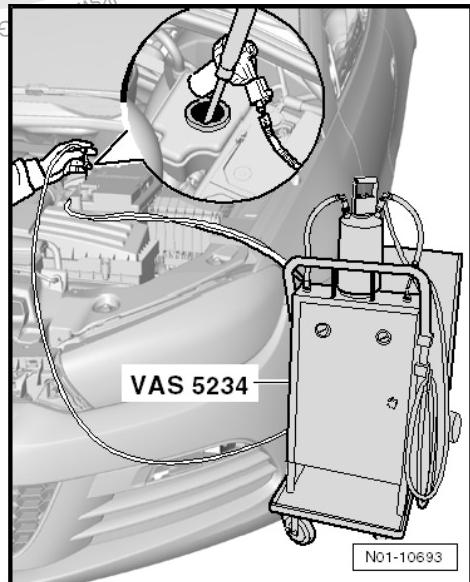
W00-10435

◆ Hose Clamps - Up To 25 mm -3094-



W00-0079

Removing



VAS 5234

N01-10693



WARNING

For all repair work, especially in the engine compartment due to the tight working conditions, observe the following:

- ◆ *Route all lines and wires in their original locations.*
- ◆ *Ensure sufficient clearance to all moving or hot components.*

- Place sufficient lint-free cloths in the area of the engine and transmission.



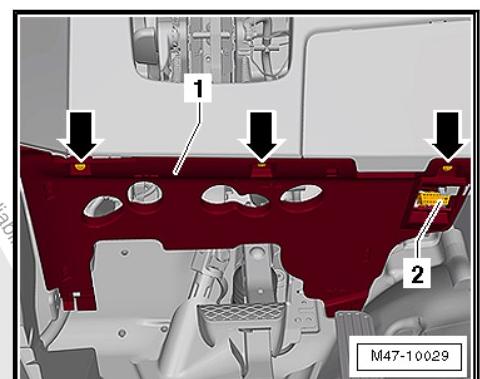
- Extract as much brake fluid as possible from the brake fluid reservoir using Brake Charger/Bleeder Unit -VAS5234-.



WARNING

- ◆ *Brake fluid must never come into contact with fluids containing mineral oils (oil, gas, cleaning solutions). Mineral oil damages the plugs and sleeves in the brake system.*
- ◆ *Brake fluid is poisonous. NEVER siphon brake fluid with your mouth! Also due to its corrosive effect, brake fluid must not come into contact with paintwork.*
- ◆ *Extract brake fluid cannot be used again.*
- ◆ *Observe the disposal regulations.*

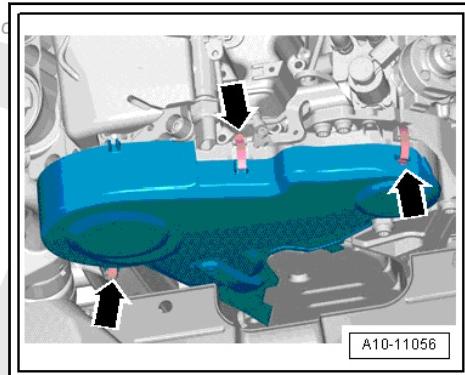
- Remove the wiper arms. Refer to ⇒ Electrical Equipment; Rep. Gr. 92; Windshield Wiper System; Windshield Wiper System, Removing and Installing; Wiper Arms, Removing
- Remove the plenum chamber cover. Refer to ⇒ Body Exterior; Rep. Gr. 50; Overview - Plenum Chamber Cover.
- Remove the plenum chamber bulkhead. Refer to ⇒ Body Exterior; Rep. Gr. 50; Overview - Plenum Chamber Bulkhead.
- If equipped, remove the instrument panel trim panel -1- in the driver footwell. Refer to ⇒ Body Interior; Rep. Gr. 70; Component Location Overview - Passenger Compartment Trim.



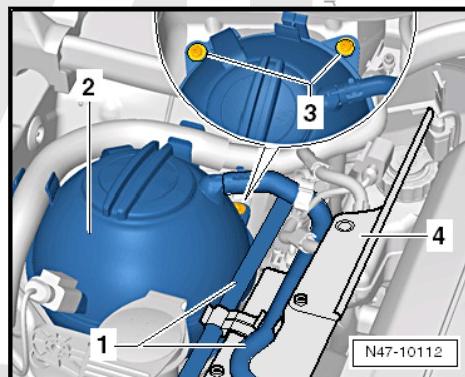
- To do this, remove the bolts -arrows-.
- Remove diagnostic plug -2-.
- Remove the footwell vent on the driver side. Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 80; Air Duct; Overview - Passenger Compartment Air Ducts and Air Distribution.
- If equipped, remove the knee airbag. Refer to ⇒ Body Interior; Rep. Gr. 69; Knee Airbags; Knee Airbag with Igniter, Removing and Installing.
- Disconnect brake pedal from brake booster. Refer to ⇒ [P2.6 edal, Removing from Brake Booster](#), page 119.
- Remove the battery. Refer to ⇒ Electrical Equipment; Rep. Gr. 27; Battery, Removing and Installing.
- Remove the air filter. Refer to ⇒ Rep. Gr. 23; Air Filter; Overview - Air Filter Housing.
- If necessary, remove the intake hose. Refer to ⇒ Rep. Gr. 23; Air Filter; Overview - Air Filter Housing.



- Remove the battery tray. Refer to ⇒ Electrical Equipment; Rep. Gr. 27; Battery; Battery Tray, Removing and Installing.
- Remove the engine cover. Refer to ⇒ Rep. Gr. 10; Engine Cover; Engine Cover, Removing and Installing.
- Open the clips -arrows- and remove the upper toothed belt cover.



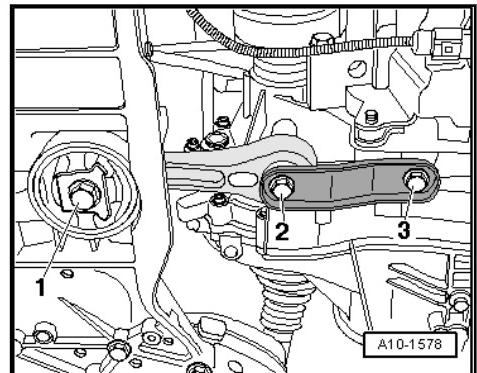
- Remove the lines -1-.



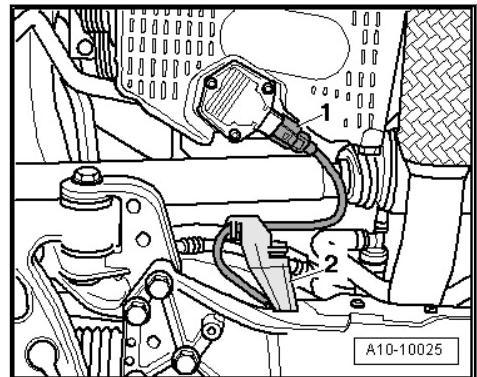
- Remove the screws -3- and move the coolant reservoir -2- to the side.
- Remove the Auxiliary Fuel Pump -V393-. Refer to ⇒ Rep. Gr. 20; Fuel Supply System, Servicing; Auxiliary Fuel Pump -V393- (Inline Fuel Pump).
- Remove the shift cable from the gearshift lever and remove the cable bracket from the transmission housing. Refer to ⇒ Rep. Gr. 34; Shift Mechanism, Servicing; Shift Mechanism, Removing and Installing.
- Remove the noise insulation. Refer to ⇒ Body Exterior; Rep. Gr. 50; Noise Insulation; Overview - Noise Insulation.
- Remove the bolts -1- through -3- and the pendulum support.



- Release and disconnect the connector -1-.

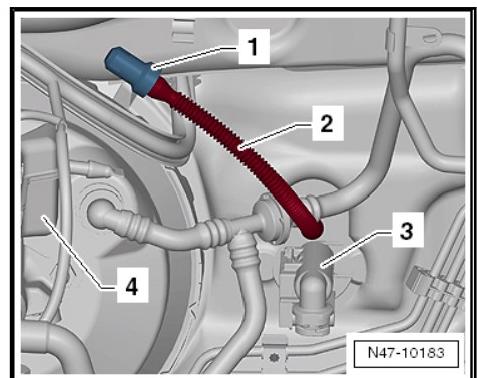


- Unclip bracket -2- for electrical wiring to Oil Level Thermal Sensor -G266- from subframe.
- Remove the diesel particulate filter. Refer to ⇒ Exhaust System; Rep. Gr. 26; Particulate Filter, Removing And Installing.
- Seal the turbocharger using the Engine Bung Set - VAS6122-.



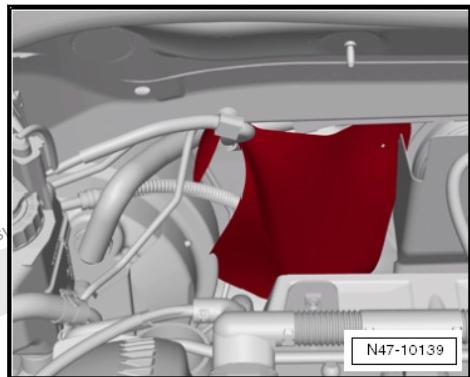
Vehicles with a manual transmission:

- Remove the supply hose -2- for the clutch master cylinder -3- from the brake fluid reservoir -4-.
- Seal the supply hose -2- for the clutch master cylinder -3- using Sealing Tool -T10249- -1- or Engine Bung Set -VAS6122-.
- Seal off the supply hose -2-.

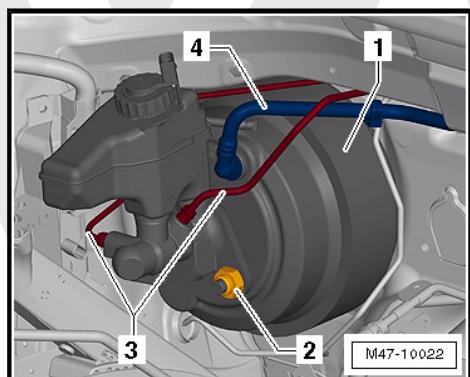




Continuation for all vehicles



- Remove the heat shield and move it to the side.
- Remove brake lines -3- on the master brake cylinder -1-.



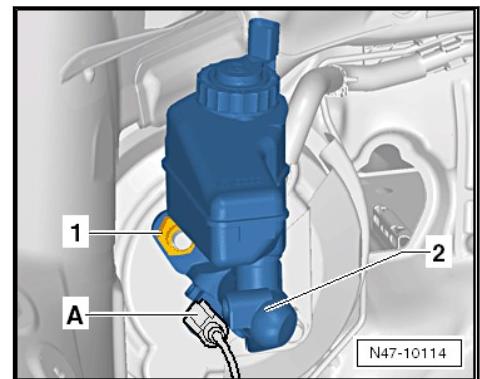
Caution

Brake lines must not be bent.

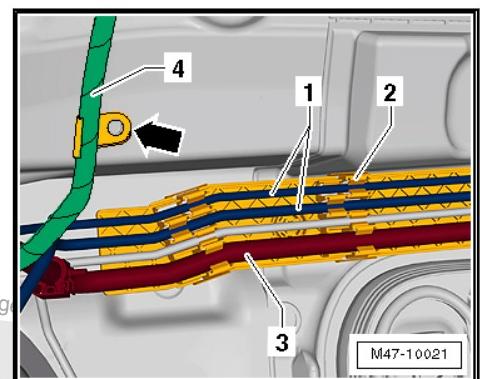
Do not confuse the brake lines when connecting them.

Mark the lines in their installed position before removing them.

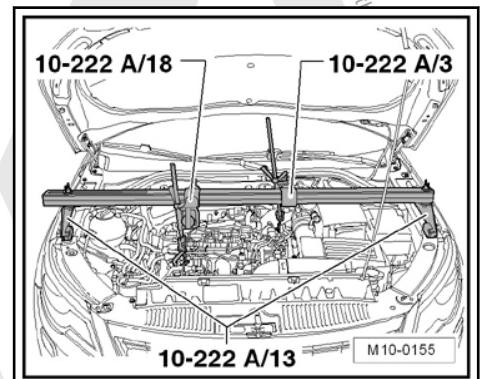
- Seal off the brake lines with the plugs from the Repair Kit -1H0 698 311 A-.
- Remove the nut -2-.
- Pull the vacuum line -4- out of the brake booster -1-.
- Remove the heat shield, if equipped.
- Remove the connector -A- from Brake Lamp Switch -F-.



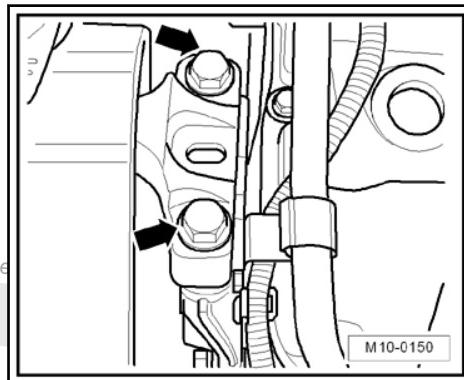
- Remove the nut -1- from the brake master cylinder -2-.
- Carefully take brake master cylinder -2- out of brake booster.
- Unclip brake lines -1- from the bracket -2-.



- Unclip vacuum line -3- from the bracket -2-.
- If equipped, unclip the wiring harness -4- on the bulkhead -arrow-.
- The fuel lines remain connected.



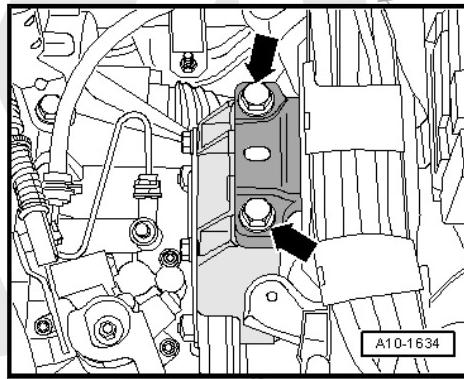
- Position the Engine Support Bridge -10-222A- with the necessary Adapters as shown.
- Support the engine in its installed position.
- Remove the engine mount bolts -arrows-.



 **Note**

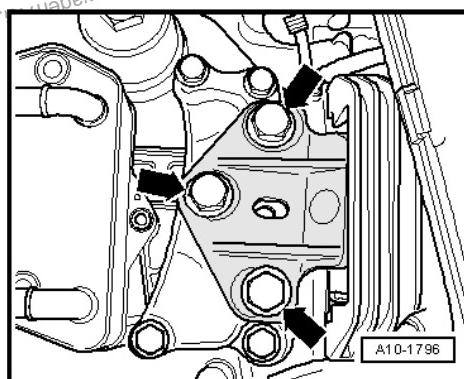
The subframe bolts may only be loosened when the engine is supported with the Engine Support Bridge -10-222A.

Vehicles with a manual transmission:



- Remove the transmission mount bolts -arrows-.

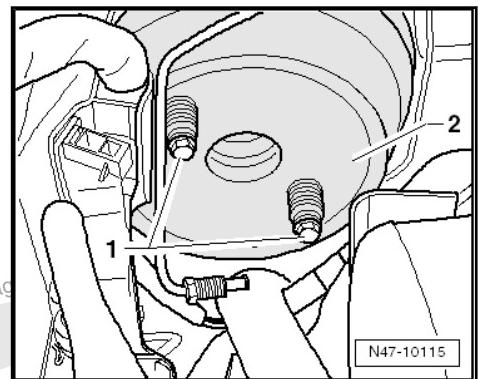
Vehicles with DSG transmission:



- Remove the transmission mount bolts -arrows-.

Continuation for all vehicles:

- Lower the assembly as far as possible, alternating from side to side using the spindles and pull it forward.
- Make sure there is driveshaft clearance to the subframe.
- Make sure that all components are easily accessible.
- Remove the screws -1- from the brake booster.

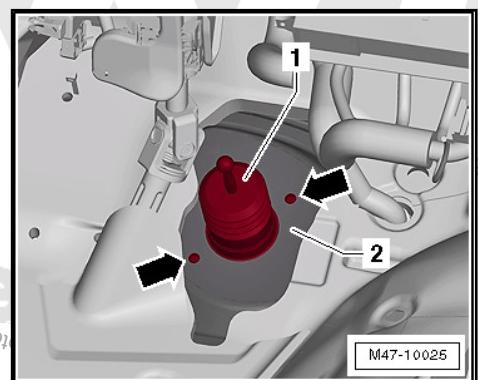


- Carefully remove the brake booster -2- from the vehicle.

Installing

Installation is the reverse of removal, with special attention to the following:

- Carefully install the brake booster and tighten the bolts hand-tight.
- When installing together the brake master cylinder and brake booster, make sure that the push rod is correctly located in the brake master cylinder.
- Make sure that the brake booster -1- sits correctly in the support openings -arrows- on the bulkhead -2-.



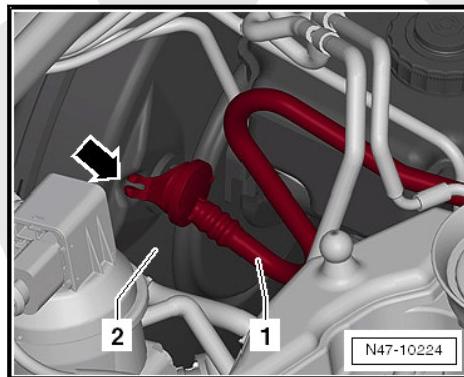
- Make sure the seal fits correctly when attaching the master brake cylinder to the brake booster -item 6- [⇒ Item 6 \(page 146\)](#).
- Clip the brake pedal to the brake booster. Refer to [⇒ P2.7 edal, Attaching to Brake Booster](#), page 120.
- Check the adjustment for the engine-subframe mount. Refer to ⇒ Rep. Gr. 10; Subframe Mount; Engine-Subframe Mount, Checking Adjustment.
- Bleed the brake system. Refer to [⇒ S1.3 ystem, Bleeding](#), page 132.

Vehicles with a manual transmission:

- Bleed the clutch. Refer to ⇒ Rep. Gr. 30; Clutch Mechanism; Clutch Mechanism, Bleeding.



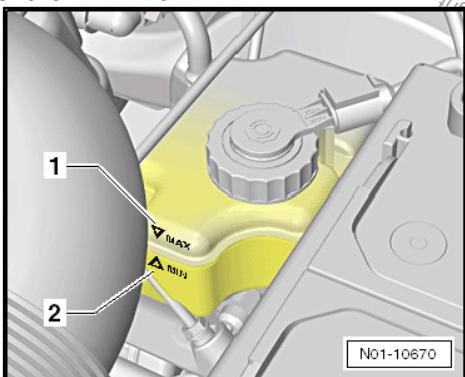
Continuation for all vehicles:



- Insert the tab on the vacuum line -1- into the opening -arrow- in the brake booster -2-.

Note

To prevent the brake fluid from overflowing from the reservoir, the level must not be over the MAX mark -1-.



Tightening specification

Component	Tightening specification
Brake booster to pedal assembly/bulk-head ◆ Use new bolts.	25 Nm
Brake master cylinder to brake booster ◆ Replace after removing	50 Nm
Brake lines to brake master cylinder	14 Nm
Engine Cover	Refer to ⇒ Rep. Gr. 10; Engine Cover; Engine Cover, Removing and Installing.
Air Filter	Refer to ⇒ Rep. Gr. 23; Air Filter; Overview - Air Filter Housing.
Battery tray	Refer to ⇒ Electrical Equipment; Rep. Gr. 27; Battery; Battery Tray, Removing and Installing.
Battery	Refer to ⇒ Electrical Equipment; Rep. Gr. 27; Battery, Removing and Installing.
Exhaust pipe	Refer to ⇒ Rep. Gr. 26; Exhaust Pipes/Mufflers; Overview - Muffler.
Particulate Filter	Refer to ⇒ Rep. Gr. 26; Overview - Emissions Control.
Wiper arms	Refer to ⇒ Electrical Equipment; Rep. Gr. 92; Windshield Wiper System; Windshield Wiper System, Removing and Installing; Wiper Arms, Removing

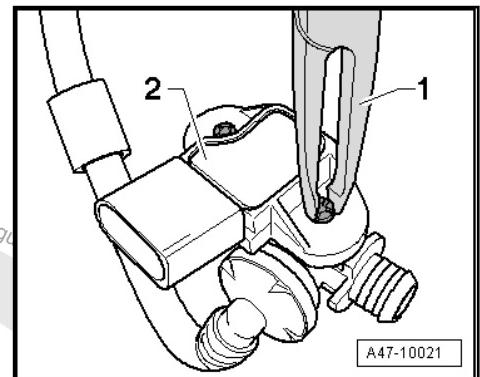


Component	Tightening specification
Plenum Chamber Cover	Refer to ⇒ Body Exterior; Rep. Gr. 50; Overview - Plenum Chamber Cover.
Plenum Chamber Bulkhead	Refer to ⇒ Body Exterior; Rep. Gr. 50; Overview - Plenum Chamber Bulkhead.

4.7 Vacuum Sensor -G608-

Only on vehicles with a hydraulic brake booster

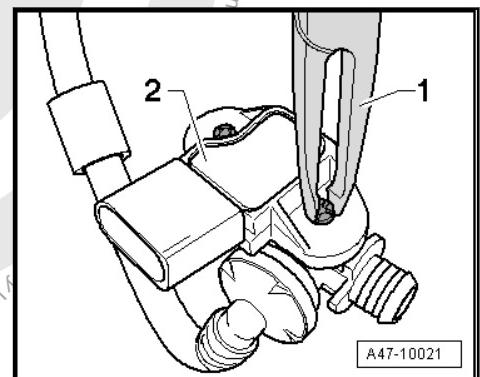
- Remove the engine cover. Refer to ⇒ Rep. Gr. 10; Engine Cover; Engine Cover, Removing and Installing.
- Remove the vacuum hose with the Vacuum Sensor -G608- from the brake booster.
- Release the clips with pliers -1-.



- Carefully pry off the Vacuum Sensor -G608- -2-.

4.8 Brake Booster Pressure Sensor - G294-

- Remove the engine cover. Refer to ⇒ Rep. Gr. 10; Engine Cover; Engine Cover, Removing and Installing.
- Remove the vacuum hose with the Brake Booster Pressure Sensor -G294- from the brake booster.
- Release the clips with pliers -1-.



- Carefully pry out the Brake Booster Pressure Sensor -G294- -2-.



4.9 Brake System Vacuum Pump -V192-, Gasoline Engine

Removing

Component location of Brake Vacuum Pump -V192- is located on DSG transmission at front in direction of travel.

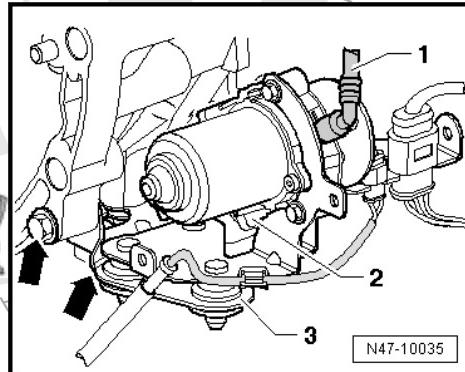
It is not possible to service the Brake System Vacuum Pump -V192-. If there is a malfunction, replace the Brake System Vacuum Pump -V192-.



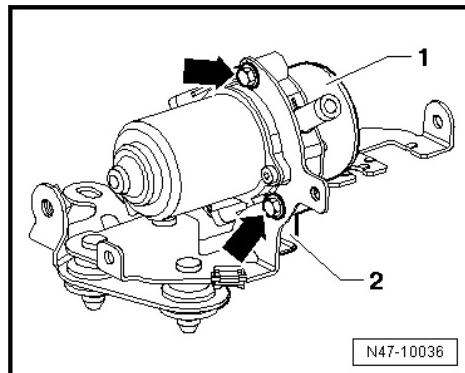
Note

The illustrations show the Brake System Vacuum Pump -V192- installed horizontally. Other engine/transmission combinations have it installed vertically.

- Remove the noise insulation. Refer to ⇒ Body Exterior; Rep. Gr. 66; Overview - Noise Insulation.
- Disconnect the vacuum line -1- from the Brake System Vacuum Pump -V192-.

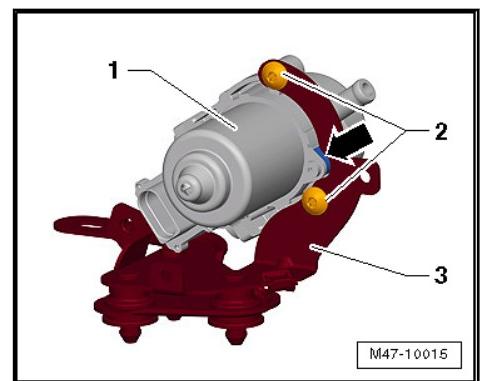


- Release and disconnect the harness connector -2- for the Brake System Vacuum Pump -V192-.
- Unclip the wiring harnesses and lines from the bracket -3-.
- Unscrew the bracket bolts -arrows- -3-.
- Remove bracket -2- and -3- using the Brake System Vacuum Pump -V192-.
- Then unscrew -arrows- Brake System Vacuum Pump -V192- -1- from bracket -2-.





Installing



Installation is the reverse of removal, with special attention to the following:

Note the Installation Position of the Brake System Vacuum Pump -V192-

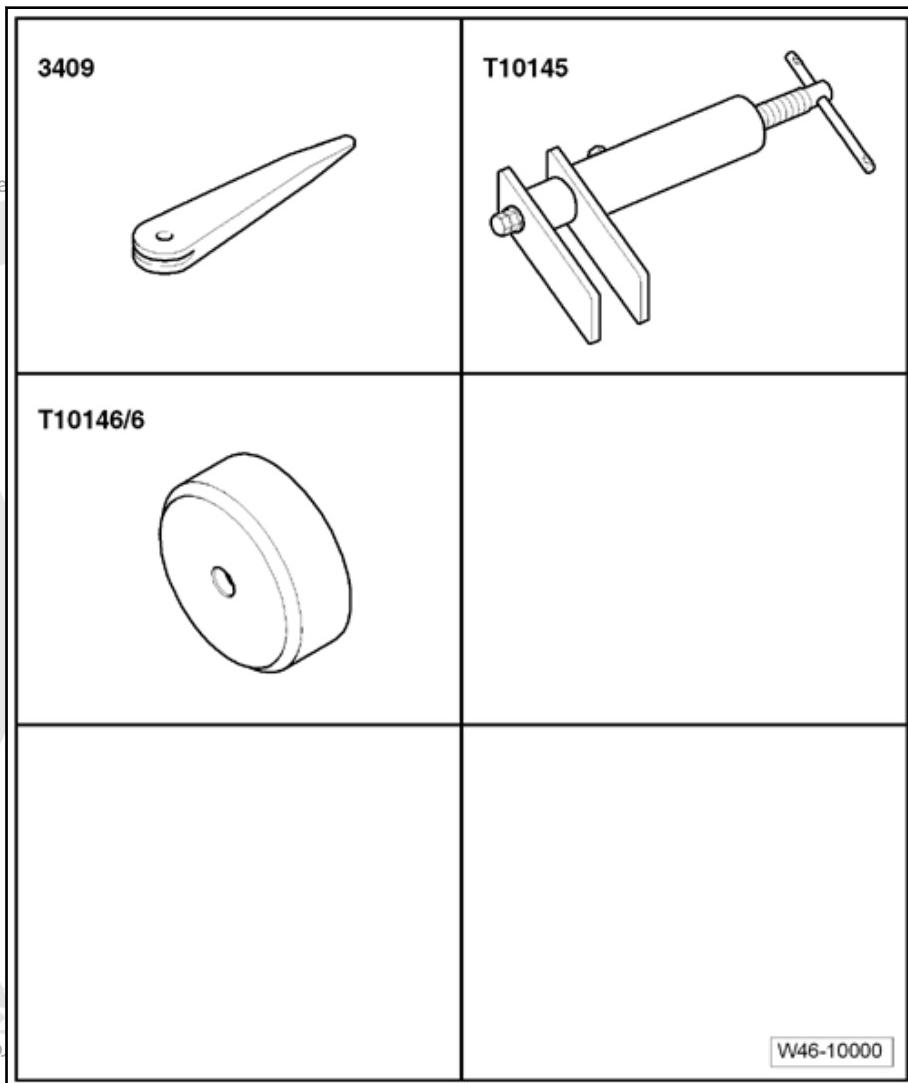
- The Brake System Vacuum Pump -V192- -1- must be positioned with the guide tab -arrow- in the bracket opening -3-.
- Use bolts to tighten down the Brake System Vacuum Pump -V192- -1- -2-.

Tightening Specifications

Component	Tightening Specifications
Brake System Vacuum Pump -V192- to bracket	8 Nm
Bracket to automatic transmission	25 Nm



5 Special Tools

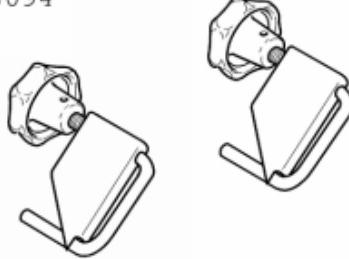
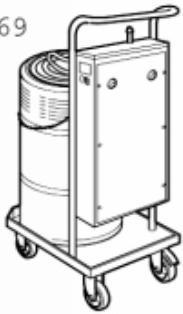


W46-10000

Special tools and workshop equipment required

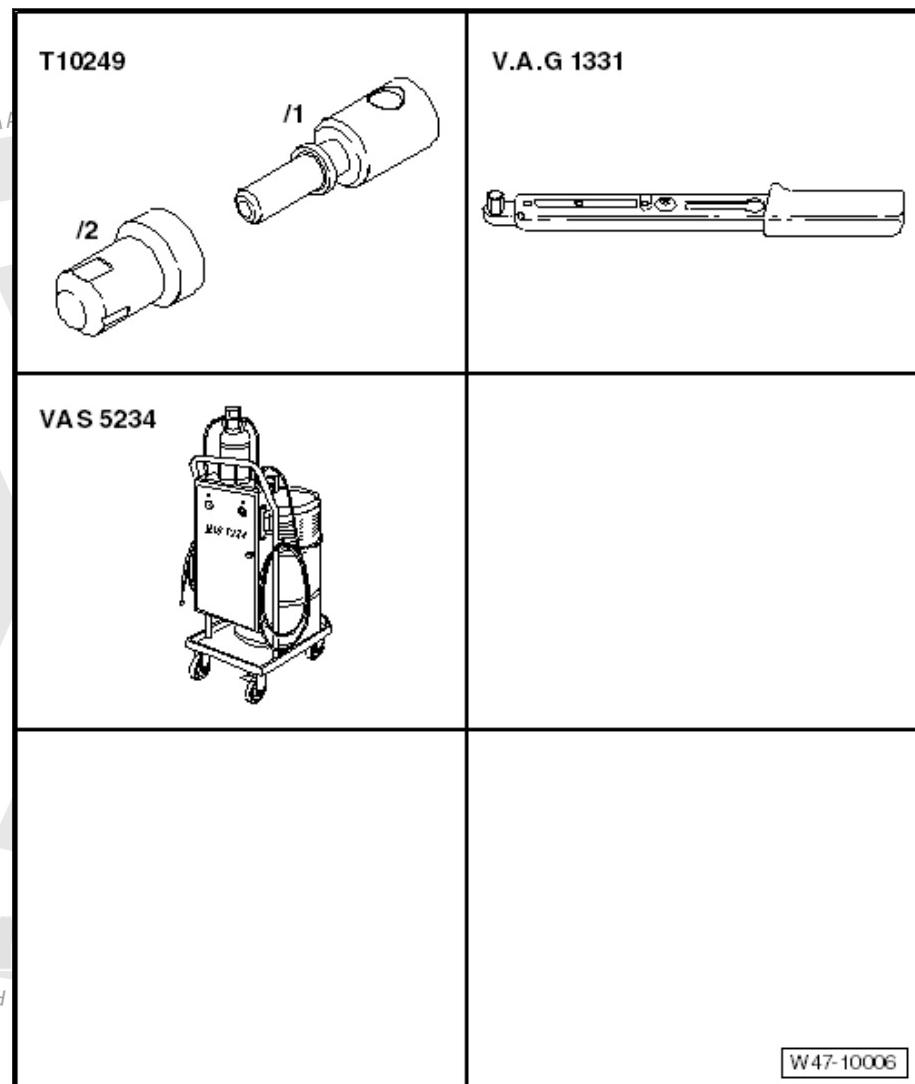
- ◆ Trim Removal Wedge -3409-
- ◆ Piston Resetting Tool -T10145-
- ◆ Piston Resetting Tool - Cap /6 -T10146/6-



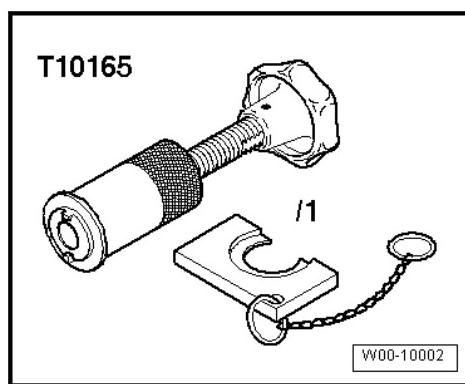
 3094	 V.A.G 1331
 V.A.G 1869	 VAS 5234

W47-10000

- ◆ Hose Clamps - Up To 25mm -3094-
- ◆ Torque Wrench 1331 5-50Nm -VAG1331-
- ◆ Brake Charge and Bleed Equipment -VAG1869-
- ◆ Brake Charge and Bleed Equipment - Upgrade Kit -
VAG1869/4-
- ◆ Brake Charger/Bleeder Unit -VAS5234-



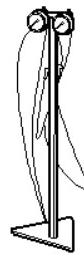
- ◆ Sealing Tool -T10249-
- ◆ Torque Wrench 1331 5-50Nm -VAG1331-
- ◆ Brake Charger/Bleeder Unit -VAS5234-
- ◆ Brake Caliper Tool -T10165-





◆ Brake Pressure Gauge -VAG1310A-

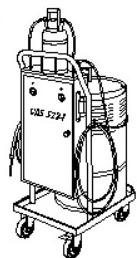
V.A.G 1310 A



W00-0562

◆ Brake Charger/Bleeder Unit -VAS5234-

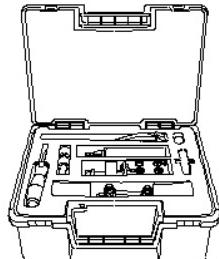
VAS 5234



W00-1101

◆ Brake Line Tool Kit -VAS6056-

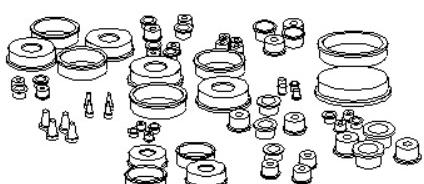
VAS 6056



W00-10372

◆ Engine Bung Set -VAS6122-

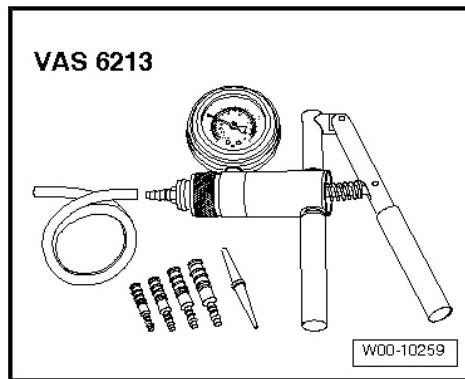
VAS 6122



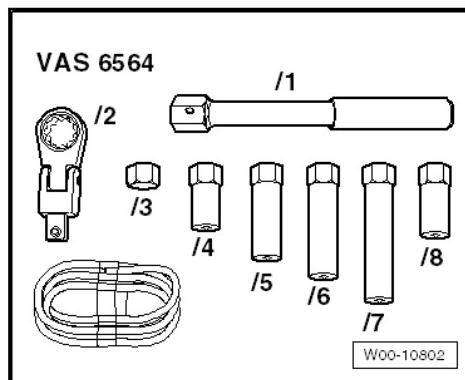
W00-10435



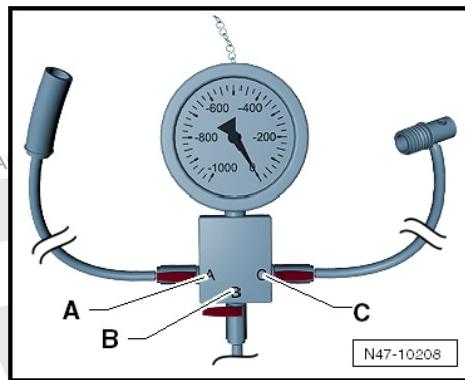
- ◆ Hand Vacuum Pump -VAS6213-



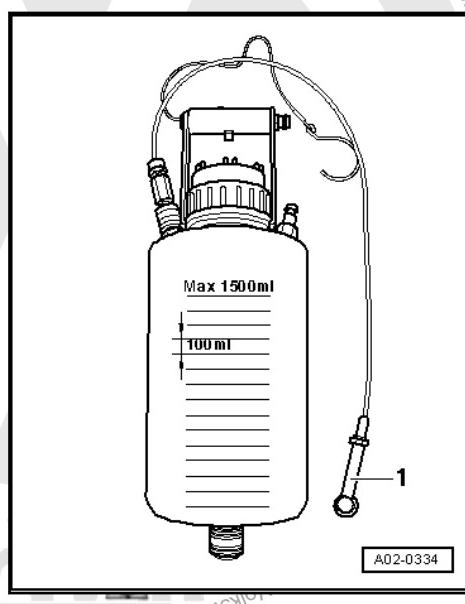
- ◆ Brake Bleeding Tool Set -VAS6564-



- ◆ Brake Servo Tester -VAS6721-



- ◆ Bleeder Bottle





- ◆ Hose Clamps - Up To 40mm -3093-



Edition K0059076221 FU 12/09/2014 - ESP





6 Revision History

Revision	Date	Job Type	Feedback #	Notes	Editor
	04/26/2023	Correction			JY
	04/14/2023	Local Update			JY
1	12/09/2014	Factory Update/Missing Book	N/A		Eric Puterbaugh

Cautions & Warnings

Please read these **WARNINGS** and **CAUTIONS** before proceeding with maintenance and repair work. You must answer that you have read and you understand these **WARNINGS** and **CAUTIONS** before you will be allowed to view this information.

- If you lack the skills, tools and equipment, or a suitable workshop for any procedure described in this manual, we suggest you leave such repairs to an authorized Volkswagen retailer or other qualified shop. We especially urge you to consult an authorized Volkswagen retailer before beginning repairs on any vehicle that may still be covered wholly or in part by any of the extensive warranties issued by Volkswagen.
- Disconnect the battery negative terminal (ground strap) whenever you work on the fuel system or the electrical system. Do not smoke or work near heaters or other fire hazards. Keep an approved fire extinguisher handy.
- Volkswagen is constantly improving its vehicles and sometimes these changes, both in parts and specifications, are made applicable to earlier models. Therefore, part numbers listed in this manual are for reference only. Always check with your authorized Volkswagen retailer parts department for the latest information.
- Any time the battery has been disconnected on an automatic transmission vehicle, it will be necessary to reestablish Transmission Control Module (TCM) basic settings using the Volkswagen Factory Approved Scan Tool (ST).
- Never work under a lifted vehicle unless it is solidly supported on stands designed for the purpose. Do not support a vehicle on cinder blocks, hollow tiles or other props that may crumble under continuous load. Never work under a vehicle that is supported solely by a jack. Never work under the vehicle while the engine is running.
- For vehicles equipped with an anti-theft radio, be sure of the correct radio activation code before disconnecting the battery or removing the radio. If the wrong code is entered when the power is restored, the radio may lock up and become inoperable, even if the correct code is used in a later attempt.
- If you are going to work under a vehicle on the ground, make sure that the ground is level. Block the wheels to keep the vehicle from rolling. Disconnect the battery negative terminal (ground strap) to prevent others from starting the vehicle while you are under it.
- Do not attempt to work on your vehicle if you do not feel well. You increase the danger of injury to yourself and others if you are tired, upset or have taken medicine or any other substances that may impair you or keep you from being fully alert.
- Never run the engine unless the work area is well ventilated. Carbon monoxide (CO) kills.
- Always observe good workshop practices. Wear goggles when you operate machine tools or work with acid. Wear goggles, gloves and other protective clothing whenever the job requires working with harmful substances.
- Tie long hair behind your head. Do not wear a necktie, a scarf, loose clothing, or a necklace when you work near machine tools or running engines. If your hair, clothing, or jewelry were to get caught in the machinery, severe injury could result.
- Do not re-use any fasteners that are worn or deformed in normal use. Some fasteners are designed to be used only once and are unreliable and may fail if used a second time. This includes, but is not limited to, nuts, bolts, washers, circlips and cotter pins. Always follow the recommendations in this manual - replace these fasteners with new parts where indicated, and any other time it is deemed necessary by inspection.

Cautions & Warnings

- Illuminate the work area adequately but safely. Use a portable safety light for working inside or under the vehicle. Make sure the bulb is enclosed by a wire cage. The hot filament of an accidentally broken bulb can ignite spilled fuel or oil.
- Friction materials such as brake pads and clutch discs may contain asbestos fibers. Do not create dust by grinding, sanding, or by cleaning with compressed air. Avoid breathing asbestos fibers and asbestos dust. Breathing asbestos can cause serious diseases such as asbestosis or cancer, and may result in death.
- Finger rings should be removed so that they cannot cause electrical shorts, get caught in running machinery, or be crushed by heavy parts.
- Before starting a job, make certain that you have all the necessary tools and parts on hand. Read all the instructions thoroughly; do not attempt shortcuts. Use tools that are appropriate to the work and use only replacement parts meeting Volkswagen specifications. Makeshift tools, parts and procedures will not make good repairs.
- Catch draining fuel, oil or brake fluid in suitable containers. Do not use empty food or beverage containers that might mislead someone into drinking from them. Store flammable fluids away from fire hazards. Wipe up spills at once, but do not store the oily rags, which can ignite and burn spontaneously.
- Use pneumatic and electric tools only to loosen threaded parts and fasteners. Never use these tools to tighten fasteners, especially on light alloy parts. Always use a torque wrench to tighten fasteners to the tightening torque listed.
- Keep sparks, lighted matches, and open flame away from the top of the battery. If escaping hydrogen gas is ignited, it will ignite gas trapped in the cells and cause the battery to explode.
- Be mindful of the environment and ecology. Before you drain the crankcase, find out the proper way to dispose of the oil. Do not pour oil onto the ground, down a drain, or into a stream, pond, or lake. Consult local ordinances that govern the disposal of wastes.
- The air-conditioning (A/C) system is filled with a chemical refrigerant that is hazardous. The A/C system should be serviced only by trained automotive service technicians using approved refrigerant recovery/recycling equipment, trained in related safety precautions, and familiar with regulations governing the discharging and disposal of automotive chemical refrigerants.
- Before doing any electrical welding on vehicles equipped with anti-lock brakes (ABS), disconnect the battery negative terminal (ground strap) and the ABS control module connector.
- Do not expose any part of the A/C system to high temperatures such as open flame. Excessive heat will increase system pressure and may cause the system to burst.
- When boost-charging the battery, first remove the fuses for the Engine Control Module (ECM), the Transmission Control Module (TCM), the ABS control module, and the trip computer. In cases where one or more of these components is not separately fused, disconnect the control module connector(s).
- Some of the vehicles covered by this manual are equipped with a supplemental restraint system (SRS), that automatically deploys an airbag in the event of a frontal impact. The airbag is operated by an explosive device. Handled improperly or without adequate safeguards, it can be accidentally activated and cause serious personal injury. To guard against personal injury or airbag system failure, only trained Volkswagen Service technicians should test, disassemble or service the airbag system.



Cautions & Warnings

- Do not quick-charge the battery (for boost starting) for longer than one minute, and do not exceed 16.5 volts at the battery with the boosting cables attached. Wait at least one minute before boosting the battery a second time.
- Never use a test light to conduct electrical tests of the airbag system. The system must only be tested by trained Volkswagen Service technicians using the Volkswagen Factory Approved Scan Tool (ST) or an approved equivalent. The airbag unit must never be electrically tested while it is not installed in the vehicle.
- Some aerosol tire inflators are highly flammable. Be extremely cautious when repairing a tire that may have been inflated using an aerosol tire inflator. Keep sparks, open flame or other sources of ignition away from the tire repair area. Inflate and deflate the tire at least four times before breaking the bead from the rim. Completely remove the tire from the rim before attempting any repair.
- When driving or riding in an airbag-equipped vehicle, never hold test equipment in your hands or lap while the vehicle is in motion. Objects between you and the airbag can increase the risk of injury in an accident.

I have read and I understand these Cautions and Warnings.

